ISSUES IN EXPORT CONTROL

HEARING

BEFORE THE

SUBCOMMITTEE ON
INTERNATIONAL ECONOMIC POLICY AND TRADE

OF THE

COMMITTEE ON
INTERNATIONAL RELATIONS
HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTH CONGRESS

FIRST SESSION

JANUARY 25, 1995

Printed for the use of the Committee on International Relations

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ISSUES IN EXPORT CONTROL

WEDNESDAY, JANUARY 25, 1995

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERNATIONAL RELATIONS,
SUBCOMMITTEE ON INTERNATIONAL
ECONOMIC POLICY AND TRADE,
Washington, DC.

The subcommittee met, pursuant to call, at 10:30 a.m. in room 2172, Rayburn House Office Building, Hon. Toby Roth (chairman of the subcommittee) presiding.

Mr. ROTH. Before turning to today's hearing, let me first welcome the Members of our subcommittee. After nearly 10 years as a Ranking Member, it is exciting for me to serve as Chair.

This subcommittee has developed a reputation for two things. We operate in an effective bipartisan manner, and we get legislation passed. This subcommittee is not a debating society. We get the job done. Our focus is to create jobs for American workers by expanding American exports. That is important to all of us, and that is why we do not stress partisanship or parochialism; we do not allow either to intervene in this subcommittee.

On many issues, you can't find two more different philosophies than Ranking Member Sam Gejdenson's and mine. But on this subcommittee, we have worked well together to the benefit of America's workers and America's economic future.

So I hope we can continue in that spirit, and that will be my watchword as your Chairman. Sam Gejdenson set a high standard as an effective, fair-minded Chairman. My goal is to meet that standard. And I welcome his help and the cooperation of every Member in making this subcommittee one that every one of us can be proud to serve on.

Now let me turn to today's business. U.S. export controls are badly out of date. The law is 15 years old and needs rewriting. Even though many changes have been made administratively, the system is still focused on old problems. It is still mired in too much bureaucracy, and it is hurting the competitive position of our high-technology industries.

At the same time, the old law does not focus on where the problem is: proliferation. The bottom line is that export controls are affecting some $30 billion in computers, electronics, machine tools, aerospace and telecommunications, without strengthening national security.

The merchandise trade deficit was $166 billion last year, and is growing worse this year. I just came from the Banking Committee where we are talking about the situation in Mexico, our third larg-

est trading partner. We simply cannot afford to have this regulatory anchor dragging behind the boat.

The case for reform has been made for years. Now is the time to buckle down and complete the job that this subcommittee started. While I do not underestimate the difficulties in passing legislation, I am confident that this subcommittee will win enactment of the reform bill.

Let me announce today that several weeks ago I discussed this issue at some length with the President, and he has committed to this subcommittee that he will not hesitate to override the bureaucratic logjam and reach agreement with us on legislation that can be enacted.

And it may be of interest to the Members of our subcommittee and to the people at the hearing today, that as the President was leaving last night, he and I shook hands and he said he remembered our conversation in Miami. So I know that he is focused on this. He has sent people from the administration to our office to talk about this legislation. I am confident that we are going to get the job done this year.

On January 4th, I introduced H.R. 361, a complete rewrite of the Export Administration Act. It reflects the bill that this committee reported to the House last year. On January 4th, I made a statement in the House that H.R. 361 is a starting point for renewed discussions with the administration, with other committees of the House, and with outside groups.

Today we begin the final push. Our first witness is Paul Freedenberg, who is not only an expert in this area, but in many other trade areas as well. He is a man I respect greatly, especially for his knowledge of the Civil War.

Paul will provide a basic review of the issues in export controls and the economic impact of controls on the U.S. industry. In subsequent hearings, we will have administration witnesses and other outside experts so we can stand on solid ground as we move forward with this legislation.

I am confident that we can finish the job this year. I have talked to the leadership. I have talked to people that worked with us last year, and we are going to get the job done.

This morning, as I was driving to work, I heard on the radio that Reebok is now moving its plants to India, and that a local firm closed shop yesterday, costing 1,600 jobs. We hear similar reports too often as we drive to work. It is having tremendous economic impact.

That is why we are have to pass this legislation this year. This subcommittee is the best subcommittee to do the job. The people that we have on this subcommittee have a great deal of knowledge and a great deal of influence, and we are going to pass the legislation.

I am going to ask the Ranking Member, Mr. Gejdenson, to say a few words, but I first want to personally thank him for the great chairmanship he had. I know of no one who knows this issue better than he does. I am publicly asking him to support us with his whole heart and soul and spirit in this legislation because we need his help to pass this bill.

Sam, would you——

Mr. GEJDENSON. Thank you, Mr. Chairman, and let me say that it is a privilege to serve here under your chairmanship. Although obviously I wasn't thrilled with the overall results of the last election and the consequences for the Congress, I am confident that you will do an excellent job as Chairman, and that we will continue to work cooperatively on this and other issues.

I only have one question. When you are referring to the Civil War, were you referring to the war between the North and the South, or between State, Commerce and DOD, that Mr. Freedenberg also has some knowledge of?

Again, I would like to commend you, and not just yourself, Mr. Chairman, but as I look down the line at the Members on your side of the aisle and my side as well, this is an issue that doesn't know partisan battle. I think people who look at this issue honestly recognize that oftentimes when we have acted in this area, we have done two things.

We have not protected our national security and we have certainly not protected our economic security. And that national action that will protect our national security will more often than not also protect our economic security. We have to make sure that products that are generally available across the globe, often with virtually no licensing, don't get mired down in a process here that really turns out to be a sign to international purchasers of these products that basically says don't shop in the United States. If it takes days in Germany, France and England, if you can buy the product in Taiwan, in China and elsewhere, it is not logical for the United States to mire those products in long and cumbersome bureaucratic battles.

I can remember when the Secretary of Defense was fighting with the Secretary of Commerce at the end of the Bush administration, maybe it was early in the Bush administration, when they deregulated 286 computers. It was an amazing battle in that you could already buy 386 chips at Radio Shack in China. And so we have to understand what our goals are.

We need to make sure which countries pose a danger to America and to western security. We want to make sure that those countries are denied the technology and the materials that they need to endanger the rest of us. But where there is no danger and where there is a fast, rapid-moving technology, the United States needs to get out in front of it.

I just want to say this is an administration that I think has done wonderful things in the area of export control reform, but it has often taken all too long often for even this administration to move. And I can remember the hearings that we held together in the last Congress, when we were fighting over whether advanced switching systems should be made available to China. American companies were prohibited from selling the modern version of these switching systems to China. At the same time, the Chinese were making systems that were equally capable, and they were buying systems that were even faster from other countries around the globe. That doesn't help our security, it doesn't help our economy. COCOM, even before it disappeared from the scene, was already somewhat of a relic in trying to deal with these issues.

Ultimately, the dangers that present ourselves today, I think have to be handled in a number of ways. One, we have to make sure that we invest in education and in technology to stay ahead of the curve. Oftentimes these are not genies that can be kept in a bottle. And secondly, we need to focus on those countries and those organizations that do pose, an international threat, and we need to move expeditiously to control technologies to them.

Lastly, not necessarily in the jurisdiction before this committee, but I know it is very popular today to try to take out foreign assistance, and particularly to the countries of the former Soviet Union and elsewhere. Nothing is more dangerous to international security than to give up on the programs we have begun with the former Soviet Union to control fissionable material, to control technologies. And for all that we talk of doing about security here, the loss of fissionable materials from the former Soviet Union, the loss of the technicians, is probably the greatest danger today, not fast computers or fast telecommunications.

Again, I congratulate you on becoming Chairman and look forward to working with you in this next two years.

Mr. ROTH. Thank you very much for that very excellent statement. As I said before, I don't know of anyone that has a better knowledge of this legislation than Sam Gejdenson. It is delightful to have him with us again. And I promise, Sam, I will not call you Landslide Gejdenson.

Would anyone else on this side like to make an opening statement?

Yes, Mr. Manzullo.

Mr. MANZULLO. I would like to have leave to submit these remarks to be made part of the record.

Mr. ROTH. Without objection.

Mr. MANZULLO. I just want to take 30 seconds to say what a joy it is to be back on this committee. As a freshman last year, we authored a bill called the Communications and Computer Trade Freedom Act. The computer part of it became part of the Export Administration Act.

We worked very hard with Mr. Gejdenson's and Mr. Roth's staff, and there really is no opportunity for politics to get involved in our work here on this committee. Our divisions are based purely on policy, which is the way it should be. There is a good, free, open debate on it.

But again, I presume, Sam and Toby, we will debate over whether or not the world is a globe or it is an atlas. And we will have to take it from there. And I just want to say we must do everything possible to blow open those markets overseas.

The companies I represent in Rockford, Illinois are still having problems in the area of dual use technology. We had one company build a $2 million machine that was computer driven, and it took nearly two years by the time COCOM said that this computer could not launch a missile, and the company almost had to eat a $2 million machine.

We are tired of that. We are tired of computer companies in this country missing opportunities overseas and we are tired while we wait for the export licenses to be granted the would-be purchasers overseas not only canceling our contracts, but building their own

computers for their own use and for their own export. That has to come to an end.

Mr. ROTH. Thank you, Mr. Manzullo. Your entire statement will be entered in the record.

[The statement of Mr. Manzullo appears in the appendix.]

Mr. ROTH. Anyone else? Yes, Mr. McNulty.

Mr. MCNULTY. Thank you, Mr. Chairman. As you know, I am new to this committee and this subcommittee, so I wanted to take this opportunity to congratulate you as you assume the Chair.

I come here from the Trade Subcommittee of Ways and Means, so I have a very strong interest in these issues, and I just want to say that I look forward to working with you and my leader Sam and all of the Members of the subcommittee in a bipartisan manner.

Thank you.

Mr. ROTH. Well, thank you very much for that statement. And I must say that if I can do half as good a job in this subcommittee as you did in the full committee, we will do just fine.

I see the testimony here is somewhat extensive. The entire testimony will be entered into the record. As you know, we have some of the most sophisticated Members of the Congress on this subcommittee. They will read it. Mr. Freedenberg and Mr. Lewis, will you summarize your testimony? We will enter your testimony into the record. I ask Mr. Freedenberg to give us his testimony.

STATEMENT OF PAUL FREEDENBERG, INTERNATIONAL TRADE CONSULTANT, BAKER AND BOTTS, FORMER UNDER SECRETARY OF COMMERCE

Mr. FREEDENBERG. Thank you, Mr. Chairman. I didn't plan to read all 47 pages. You asked me to testify on Sunday night, and what I did was to pull together research that I had done in the past, both in a book chapter and in earlier testimony before this committee, to give you a sense of the history of export controls. I think the committee wants to have a feeling for—especially the new Members—for the history of export controls since 1949, why we had them. And I want to give you a feeling for how they have changed and why we need to enact a new law.

Mr. Chairman and Members of the subcommittee, I am honored to be chosen as your lead-off witness on the subject of the reauthorization of the Export Administration Act. I first dealt with this issue in 1979 as a member of the Minority Republican staff of the Senate Banking Committee, as we considered proposals to adapt export controls to the challenges of the 1980's.

That law, which was revised in 1985, after a 10-month hiatus during which the International Emergency Economic Powers Act had to be invoked, and again in 1988 as an amendment to the Omnibus Trade Act, is in essence the same Act that our government utilizes today as the basic authority to control exports.

While regulations can be cobbled together to adapt it to the new world situation, the act is badly in need of revision. Moreover, the 1990's have seen our Nation operating under the emergency powers of IEEPA, as the International Emergency Economic Powers Act is known, for a long period of time. In fact, a longer period under

IEEPA than under the authority of the Export Administration Act, but there is really no emergency to justify the invocation of IEEPA.

Clearly the time has come to take a dispassionate look at the issue, and I am confident that Congress can devise a law that controls dangerous exports while preserving our Nation's international competitiveness. We cannot and should not duck this issue, and, Mr. Chairman, you are to be commended for introducing H.R. 361 based on the legislative work done during the 103d Congress. I believe that H.R. 361 is an excellent starting point for your consideration of the new act.

You invited me, Mr. Chairman, to testify before this subcommittee on the history of export controls in the post-World War II world, drawing on my experience as a former Assistant Secretary for Trade Administration and as Under Secretary for Export Administration in the administration of President Ronald Reagan.

You asked me to discuss the manner in which the environment for export controls has changed in the post-war world and what suggestions I might have for reauthorization of the act. As I noted, I have drawn on earlier research.

As we sit here today, the United States is attempting to create a new multilateral organization to deal with export controls that would include Russia, our former enemy, within its membership. Unfortunately, given the attitudes of our allies and based on what they consider to be U.S. domination of COCOM, we must reconcile ourselves to the creation of a new organization that will not have anywhere near the discipline, the structure, or the coherence that COCOM had.

Most importantly, it has been agreed that the new organization will not have single member veto that its COCOM predecessor had, and that means that the United States won't be able to block exports to target countries by other members of the new organization, even if the United States considers those exports to be dangerous or contrary to the new rules.

In fact, I have been told that we will be lucky if the new rules—the rules of the new organization are as strong as the rules of the current anti-proliferation organizations such as the Australian group on chemical warfare and the Missile Technology Control Regime.

These organizations have a list of dangerous products that members have pledged to control, but they lack a secretariat, regular meetings, or tight rules about licensing procedures. They operate as essentially a "gentleman's agreement."

The prospect of this arrangement governing multilateral export controls for the balance of this decade is not reassuring to U.S. exporters. They feel that the United States will get the worst of two worlds, with U.S. companies losing sales, but target countries still able to obtain products from alternative sources.

In my testimony, which I am summarizing now, I talk about the growth of COCOM in the post-Cold War world, and also how U.S. export controls were carried out. In 1979, we declared a "no-exceptions" policy to COCOM. That meant that we vetoed all attempts to get permission to export beyond the embargo list. That created some animosity among our allies, and that policy was not lifted until 1989 when the Soviets pulled out of Afghanistan.

I go on to talk about the end of the Cold War finally liberalizing the COCOM list, and how that has created a better environment for U.S. exporters. But there are still a number of issues before the committee. Let me go on to those issues now.

On short notice it is hard to get everything organized, but let me turn to the question of the future of export controls. As we look toward the future of export controls, we see a picture that is at one time simpler, and at the same time more complicated for the business community.

It is likely to be simpler because a smaller number of products will be controlled. But it is going to be more complicated, because despite the reduced numbers, there will be an increased number of lists to check for embargoes or licenses, and there will be a less obvious logic to the reasons for control, with high-technology computers readily available for shipment to the East, while comparatively low-technology products will be caught under one or another of the foreign policy control regimes.

The average life of a computer is now under 18 months. Indeed, more than 70 percent of 1972–92 revenues for the U.S. computer industry, came from products that didn't exist two years earlier. That figure is expected to exceed 80 percent this year. What that statistic means is that the computer industry must get its products to market quickly, or risk missing entire product cycle, a potentially debilitating development.

The President's Trade Promotion Coordinating Committee announcement was very welcome, because it, for the first time, said that the government would anticipate where technology was going. In drawing up its control list, it is a major shift in the U.S. Government approach to this problem.

These announcements, as it has been noted earlier, make sense for another reason. Semiconductors are not controlled at all, except to proscribed countries, and American ship manufacturers have developed numerous vendor relationships with customers around the world, in many countries, including many that are outside the former COCOM.

This is the principal vehicle by which clone computers appear on the worldwide market. So that soon after U.S. computers incorporating the same chips first appear, these clones appear. An attempt to control computers using these chips, while allowing noncontrolled computers using the same chips to be developed abroad, only harms U.S. exports. And so it really creates a situation where it is virtually impossible to control computers.

Indeed, I go on to talk about the fact that the new computer architectures incorporate expansion slots, from 4 to 16 expansion slots, that allow the speed to be upgraded. So that you can buy an uncontrolled computer and it can be upgraded to a controlled level.

Secondly, we now have parallel processing and massively parallel processing, which allows computers to be linked together through the telephone lines and allows what is again an uncontrolled computer to achieve the speed of a supercomputer. And we also have software now available that does the same thing.

So the idea of controlling computers in this era is a virtually impossible task. Turning to another area that I am aware of, and I

will use it as my final example in the area of controls, is why unilateral controls should be strongly discouraged.

A strong bias should be created toward reliance on multilateral controls. For example, another industry that I am familiar with, the U.S. machine tool industry, is still suffering the effects as the result of lost market share and loss of reputation from the foreign policy controls imposed on the Soviet Kama River truck plant in 1979.

Because of these controls, U.S. machine tool builders lost a market in which they were the dominant supplier during the 1970's. But in addition, because they were forbidden to service their machines or even to supply spare parts, they developed a reputation within the entire Soviet market as an unreliable supplier. This meant that U.S. companies were not even asked to bid on projects which all of our COCOM allies participated. Markets with billions of dollars were effectively abdicated during the late 1970's and 1980's.

Not only that, but the reputation for unreliability continued into the successor Russian market, with prospective buyers still wary of potential U.S. foreign policy controls undermining the delivery of goods and services. Russian factory managers beyond the Kama River plant remember the dislocations caused by U.S. controls during the 1980's and hesitate to risk a rerun in the 1990's.

The same problem exists with regard to the People's Republic of China. Only in the case of the PRC, there is an ambitious modernization program under way, and in marked contrast to Russia, the Chinese have large reserves of hard currency to spend in purchasing machine tools.

United States companies that manufacture machine tools have seen their exports to the People's Republic of China grow from a paltry $1.5 million in 1981 to $154 million in 1993, and an estimated $200 million last year.

While they still trail Japan and Germany in market share, China has become their largest overseas market. Interestingly, with their ambitious industrialization plans, the Chinese have repeatedly stated their preference for American machine tools, which have an excellent reputation in the PRC.

The Chinese have noted, however, that their failure to buy more U.S. machine tools is directly related to licensing difficulties which they have encountered with the U.S. Government and that they have not encountered with the Europeans or Japanese. A cable, which Cincinnati Millicron, the largest machine toolmaker in the United States, received from the Chengdu Aircraft Corporation on February 1, 1994, is illustrative of this problem. The Chengdu aircraft technical department manager noted that in view of improved relations between China and the governments of France, Germany, and Italy, and because of the dissolution of COCOM, many machine tool companies were rushing into the China market. These companies claimed that they had the full support of their governments and they could obtain export licenses with ease.

The Chengdu department manager then went on to note, "Though we have interests in your company products, as well as other American products, but because of the difficulty in getting export licenses, we did not invite any American machine tool manu-

facturers for technical discussions." And then, quoting directly, "We sincerely hope the U.S. Government officials who are in charge of exports to be more flexible and smarter and not to kill U.S. manufacturers' opportunities in marketing their products in the fast growing China market, and let the European suppliers dominate this market. Our company is planning to send a delegation of six people to visit Germany, France, Italy and Switzerland to determine machine tool models and possibly conclude orders. We are not planning to visit manufacturers in the United States because of difficulties in obtaining licenses."

I would note that machine tools continue to be the most tightly controlled products on the U.S. control list, and indeed they are one of the last issues to be resolved in list making for the post-COCOM regime. It is critical that this be resolved in the near future, because of the incident that I have recounted reveals there is already a widespread perception and potential markets, particularly China, that the United States Government is more stringent than its former COCOM allies.

It is therefore very much in our interest to create a clear set of parameters that would govern trade among advanced western nations. Unilateralism and the residual perception of unilateralism is extremely damaging to U.S. trade and security interests. I would note that we need to have, as you do, an indexation provision within the new legislation, because there has been bitter experience of U.S. manufacturers in not getting updates of the control list.

This went on for 17 years with the U.S. machine tool industry, and similarly with telecommunications and with semiconductor production equipment. So there is a feeling that there ought to be an indexation provision, along the lines that you have included in your legislation. I think that is critical.

Mr. Lewis will address the question of interagency relations, so I won't cover that. Let me just say, however, that I didn't understand why we got into a conflict over dispute resolution in the last Congress, which actually led to the final gridlock that killed the bill. It is obvious that there can be a sensible system worked out, and it is—I understand the administration is working on that issue that is probably what the President was referring to when he said that his administration is working on the bureaucratic issues at the present time.

Finally, I would note that we live in a period of almost blinding technological and political change. So as the committee considers its new legislation, certain key points need to be kept in mind. First, as I noted in summary, technological diffusion and miniaturization, being as prevalent as they are, it is almost impossible to control technology or keep it within prescribed parameters.

Consequently, the mandate to the executive ought to be the control list should be drawn as narrowly as possible, always keeping in mind that the objective is to control the export of only those products and technologies required for the proliferation of weapons of mass destruction. The object is not and cannot be to control all sophisticated technologies.

Second, while it is necessary to impose unilateral controls temporarily, it may be necessary, a mandate for multilateralism ought to be at the core of any new legislation.

And finally, simplification and accountability ought to be the guide to any new export administration licensing process. We cannot afford to operate under an Export Administration Act devised at the height of the Cold War and last revised when the Soviet leadership was still agonizing over whether to pull out of Afghanistan. Nor can our high technology industry afford to operate under a slow, inefficient and confusing licensing process.

Given both the new threat environment and the new international competition we face, we simply must do better.

Thank you, Mr. Chairman.

Mr. ROTH. Well, thank you, Mr. Freedenberg.

[The statement of Mr. Paul Freedenberg appears in the appendix.]

Mr. ROTH. I think it is important for us to hear that message. Although most of us on the committee have heard the message before, I think it is important to hear it again.

Let me turn now to Howard Lewis, Vice President of the National Association of Manufacturers, and a real leader on this issue. Mr. Freedenberg mentioned that you are going to talk about rivalries and so on. The question, of course, is what is your best judgment of what we should be doing to make sure we pass this legislation. Our goal is to pass this legislation.

Mr. Lewis.

STATEMENT OF HOWARD LEWIS, VICE PRESIDENT FOR INTERNATIONAL TRADE, NATIONAL ASSOCIATION OF MANUFACTURERS

Mr. LEWIS. Thank you, thank you, Mr. Roth. Mr. Chairman, Members of the committee, my name is Howard Lewis. I am Vice President for Trade and Technology Policy at the National Association of Manufacturers.

I have been invited today to talk about the impact of export controls on U.S. industry, or to put it another way, to answer the following very basic question, why should we be worrying about export control policies in the first place?

I believe this is the right question to address at this time. One of my colleagues in the NAM keeps reminding me that Washington is a place where some of us have been giving the answers for so long that we have forgotten the question. He has a point.

The failed attempts in the 102d and 103d Congress to rewrite the Export Administration Act, the EAA, are clear signs that we have really not come to grips with the basic questions surrounding this issue. On one hand, efforts to reform the control system have often been sidetracked by arcane debates that have caused all of us to lose sight of the proverbial forest for the trees.

On the other hand, some of the debate over the EAA has wound up talking about the wrong forest altogether, as illustrated by the fact that many people still believe the EAA deals with arms rather than commercial exports. So let me explain in as straightforward a fashion as possible why this issue has been and still is important to U.S. industry involved in the export of commercial goods and technology.

The current export control system, as Paul indicated, was essentially put in place in the late 1940's as a means of preventing the

former Soviet Union from getting its hands on commercial goods and technologies that would help its strategic and military forces.

In theory, this system was primarily aimed at restricting high-tech exports, high-tech products. In the 1950's and 1960's, these products usually came out of the U.S. defense and space industries, rather than from our commercial sector. So the impact on U.S. commerce was relatively limited.

Theory and practice, however, really began to collide in the 1970's. The commercial sector, rather than the government, increasingly became the driver in technology development. Moreover, technology development began to outrun the ability of the control system to adjust.

As a result, by the mid-1980's, 50 percent of U.S. manufactured exports needed some form of prior approval from the U.S. Government to get out of the country. This meant that the control system was catching up far more than just leading-edge technology.

The late 1970's and early 1980's also saw the U.S. Government impose a series of unilateral controls, principally against the former Soviet Union, which seriously harmed both U.S. agriculture and U.S. industry. Unilateral agricultural controls were lifted relatively quickly, with protection against future controls on agricultural exports actually written into the 1985 EAA.

U.S. industry was not afforded anywhere near the same level of consideration or protection, a subject I would like to return to in just a moment. The basic point I would like to stick with here is that by the mid-1980's, the U.S. export control system had become a major export disincentive.

The statistic I cited just a minute ago, 50 percent of manufactured exports caught up in the system, comes from the 1987 report of the National Academy of Sciences, the NAS, entitled, Balancing the National Interest. It is a fairly solid number.

The statistic from the NAS report which received a lot more attention at the time was the estimate that the short-term cost, the direct cost of controls might be as high as $9 billion annually. This $9 billion figure was admittedly an estimate based on certain assumptions.

At the time, numerous questions were raised about the validity of the estimate. In 1993, the Institute for International Economics published a major study sizing up the U.S. export disincentive, which indicated that the NAS figure was actually a fairly good ballpark estimate.

The IIE report found that the middle range of cost estimates for all U.S. export disincentives ran from about $21 billion to $27 million, with export controls ranked as the number one disincentive.

A few minutes ago, I mentioned unilateral foreign policy controls. These controls are the bane of many a U.S. exporter's existence. A good case example of why this is so can be found in the unilateral controls placed on petroleum equipment exports to the former Soviet Union in the early 1980's. The Commerce Department in 1987 estimated that the U.S. lost $2 billion in direct export sales over the lifetime of these controls. The indirect impact was probably even more serious.

Up until that time, U.S. companies dominated the world market in arctic drilling, largely because of the expertise we had gained in

developing Alaska's North Slope. Our unilateral controls not only allowed our foreign competitors the opportunity to move in on a key market, but equally important, they provided our competitors with a chance to prove their equipment and convince customers all over the world that their products worked in these extreme conditions.

Once these unilateral controls were in place, it took an extraordinary effort, lasting five years, to get them lifted, despite widespread evidence early on that they were doing significant harm to U.S. industry, costing American jobs, and serving no purpose whatsoever since the Soviets were getting the equipment, their own equipment, from Western Europe and Japan.

Let me quickly cite some other cases where unilateral controls are having a significant adverse impact on major industries. In the late 1980's, a license application for a supercomputer to India was delayed for so long that the Indians went out and developed their own machine. We lost an export sale and created a competitor.

Because of U.S. export controls on a wide range of countries, Airbus in the late 1980's made the decision to go through the time-consuming and costly process of certifying all of their fleet for nonU.S. engines. This could lead to the loss of tens of billions of dollars in U.S. export sales and thousands of jobs in States such as Ohio and Connecticut.

In the past year, the machine tool industry, as Paul Freedenberg just indicated, has received clear evidence that uncertainty over U.S. licensing is causing customers in China to turn to suppliers in Western Europe.

Finally, as we enter what some people are calling the new information age, the U.S. not only controls some mass market software, but we actually treat it as a munition item.

The issue of unilateral foreign policy controls was examined in a recent study, economic security, the dollars and cents of U.S. foreign policy, done by the Council on Competitiveness.

Analyzing eight case studies, the report found that $6 billion in U.S. export sales and 120,000 jobs were put at risk. Whether or not you entirely agree with the numbers I have been citing over the last few minutes, you should not lose sight of the basic fact that this complex regulatory system has caught up a lot of U.S. exports, resulting in the outright loss of export sales and damaging the credibility of U.S. firms as reliable suppliers.

The harm done to U.S. industry has been serious. Are U.S. companies being as badly hurt today by this system as they have been in the past? Probably not. Significant changes have been implemented in the past two years that have reduced the burden of controls, especially for computers and telecommunications equipment.

The fact that things are not as bad as they once were, however, does not mean that this issue has gone away. Let me explain why. First, many industry sectors, ranging from machine tools to analytical instruments to semiconducters to software have not seen as many benefits from recent changes in the control system as did computers and telecommunications.

Furthermore, for the computer industry, the benefits of these changes may be short-lived. This year computer workstations will

top the current supercomputer threshold and once again be controlled.

Second, companies continue to encounter regulatory problems ranging from license delays to disputes over product classification. Equally important, corporate costs in complying with the regulations persist, despite the decrease in license applications, because new controls and screening requirements now affect an even broader group of products, some of which have never been controlled before.

It is important to remind ourselves that the export control system involves 1,500 pages of arcane regulations that change roughly 100 times a year. Even at the simplest level of licensing, there are over two dozen different general licenses. Third, unilateral controls on specific countries and products continue to be imposed.

These range from on highway tractor trucks in Iran, to scientific instruments in India, to machine tools in China. In addition, the U.S. often applies its own unilateral interpretations of multilateral agreements. Until recently, the lack of any de minimis rule in U.S. regulations for chemical mixtures is a case in point.

Fourth, the nature of the proliferation threat we face today is much more difficult to deal with through our control policies. Cold war controls focused on high technology involving a specific target and a limited number of suppliers. Counter proliferation controls often involve exactly the opposite. The technology can be very ordinary, the targets extremely diffuse, and the suppliers widespread.

And finally, the bureaucracy that created the regulatory gridlock of the 1980's is still in place. I have attached to my testimony a chart I did last year summarizing this bureaucratic system. It is at the end of the testimony.

It is important to note that far from wanting to rationalize this system, key Members of Congress last year wanted to expand it and make it even more complex. A fact which makes business very skeptical about the prospects of EAA legislation this year.

Mr. Chairman, this concludes my testimony, but before doing so, I would like to thank both you and Congressman Gejdenson for the work you have done with us on the export control issue over the years, and especially in the last two years. And I look forward to continuing this cooperation in the future.

Thank you. Be glad to answer questions.

Mr. ROTH. Well, thank you very much, Mr. Lewis and Mr. Freedenberg. We appreciate your testimony very much.

[The statement of Howard Lewis appears in the appendix.]

Mr. ROTH. You used two words which I think describe much of what has been taking place. They are "arcane debate." We need debate on this issue, but we have got to move forward now and pass this legislation.

There are no two people who know more about this legislation and how to pass it than you two do. The question I have for you is this: How do we pass this legislation this year?

If we don't pass it, I want to be able to tell my Democrat and Republican colleagues there is no chance of passing an EAA bill ever, because we are going to put the full court press on it, we are going to do everything that is necessary.

Now, as far as this turf battle we have always had, Mr. Freedenberg, if we get a letter from the President telling his people in the various departments that we want to pass this bill this year, is that going to be enough to overcome the turf battles?

Mr. FREEDENBERG. One assumes that that would work. I guess time will tell. Harry Truman said that he spent half the day trying to get people to do the job they were hired to do. So it is not always just a matter of giving the command.

I would say that it should be possible to pass this bill—that is why I was so voluminous in my testimony—once you understand the issue and how it has changed. The issue is no longer a situation where we control these things, where we either dominate or can control these things unilaterally.

We obviously have to worry about proliferation and weapons of mass destruction, but those are limited areas. They ought to be limited targets, and we ought to be able to agree on a procedure to handle those situations. And we ought to be able to simplify the regulations.

So I don't see why—I didn't understand last year, and I certainly don't see why this year—you can't pass legislation, particularly with the cooperation of the President. And you should be able to reach consensus with the other committee, particularly the old Armed Services Committee, where you had the most difficulty.

Mr. ROTH. Well, we have been working with them; we are going to reach agreement. Now, I think we are pretty well there, thanks to Mr. Gejdenson and others who have worked on this. You have looked at H.R. 361. Do you feel that this is the legislation that could pass, that should pass?

Mr. FREEDENBERG. I think it is an excellent starting point. It has incorporated all the work that we did last year. I think it, in essence, ought to be able to pass.

After you have discussed it with the other committee, made whatever deals you have to make, because it is always a long legislative process, but it is a good, solid piece of legislation, and it could be a very effective guide for export controls in the last half of the decade.

Mr. ROTH. Because you want people to be on board—and you know you are never going to have a perfect piece of legislation—but since so much work was done on this, I just want to make sure we start out here, that we all sign on and move forward on this.

Mr. Lewis, what do you think?

Mr. LEWIS. Having gotten all that praise about how much I know, I hesitate almost to ask this question, but H.R. 361 is the bill that was reported out of full committee last year?

Mr. ROTH. Yes.

Mr. LEWIS. Obviously there are large parts of that bill which NAM favors, as you well know from introducing the industry-supported bill version earlier, that was taken up before this subcommittee.

I would point out, however, that as the bill came out of full committee, there were significant issues that we raised, particularly with staff, and we would be glad to provide you with all that material again, that worried us greatly about where this bill was going.

Rather than getting into the arcane debate of Section 10 in H.R. 361 and what we liked or didn't like about it, if I could return to your more basic question of what would it take to get a bill through, let me make two points.

First of all, it seems to me, and Paul has been in this business as long as I have, longer actually, is that the political dynamics need to be changed somehow in this issue. And for want of a better way to describe it, I would say you need to front load the system, get an agreement early on among all the key parties, and then try to move the bill.

Traditionally, I think we have tended to back load the system in the sense of we got a good bill and then as it moved through the process, it increasingly was weighed down with enormous baggage and then nobody had the political will, time, or capital to sort the mess out.

So if there is one recommendation I would make, it is that we need to have a fundamental agreement going into this thing, and not hope that we can find it someplace along the line. The second—well, that is the basic point I think on this.

The second point, though, that I would like to make, and I noted that there is a large part of the business community that is very worried about what will happen to legislation this year and whether we in fact might wind up with a worse system, and, as you know, the business community has four basic goals and principles in terms of legislation, maximum extent possible. We would like to see these controls be multilateral. If we are going to resort to unilateral controls, there should be some clear discipline and accountability imposed on the system after a reasonable amount of time.

We would really like to see the whole issue of the bureaucracy, the chart that I have attached to my testimony, addressed, and I am not sure we really did get to that last year; and finally, we want improved clarity and transparency. Or as I used to say last year, if you don't want us to export something, tell us what it is and to whom you don't want us to export. That will make it a lot simpler.

We have been having some meetings with various people that the Commerce Department has been organizing, and I must say it is distressing to see how little agreement there is on this set of principles, among certain staff and Members of Congress, and among certain other private sector organizations outside the business community.

So I think it is important that somehow we recognize that we have to break this gridlock somehow and reach an agreement on developing a bill that could receive support going in and not try to develop it halfway through the process.

Mr. ROTH. Thank you very much, Mr. Lewis.

Mr. Gejdenson.

Mr. GEJDENSON. One of the problems I think is that policymakers in both Congress and the administration are confronted with a very difficult challenge. And that is that it is a technically complicated area. We have somewhere in the range of 200 new Members of Congress in the last four or five years.

And so on one side, there are industry and some folks in government who point out that there is significant economic damage from

the present process, that American competitiveness is hurt, and that unless we change this system, we will fall behind in the one part of the economy where we are competitive, that is the high technology end of the economy.

On the other side of the equation is a very dark picture. That you as an elected or appointed official by your actions in decontrolling this legislation or failing to encrypt this communication, will lead to the death of Americans and damage to American national security.

That second argument takes very little explanation. If you are the President or the Vice President or the head of the National Security Agency, and people walk into your office and say the next time there is a World Trade Center bombing, it is going to be on your head because you decontrolled these items. That is why this is a fight.

And it seems to me that if you look at all the information that is out there, that the legislation Mr. Roth has sponsored is well balanced and reasoned. It will protect our security in every possible way. And in a way that is maybe more important than even the control aspects, and that is to allow the American economy to grow so that we develop the next generation of technology so that we are always out in front because I think the greatest danger to the United States is that we fall behind technologically.

And whether it is the need of our intelligence agencies to listen in on communications in systems that are very hard to penetrate or encryptions that are very hard to penetrate, the real answer isn't that the United States has the ability to preclude the distribution of that technology because we don't hold it solely.

The real answer is to develop the technologies in the new generations to make sure that our intelligence agencies have the assets they need. Now that is a commitment of resources, technology, both in industry and in government. If we are going to succeed in this battle, and this is like the rabbi's speech on Rosh Hashanah, there must be another religious equivalent, but it is the one I am familiar with, in talking to the choir about the need to come to listen to services and listen to the rabbi's sermon, probably most importantly what we need is help from industry.

And there are some very active people in industry that work to get the message out and work to get the information out. But Mr. Roth, as capable as he is and as good as his product is, I believe will not succeed even with an administration that is behind him, unless industry sits down with each and every new Member of Congress and some of the old Members of Congress who have been on both sides of this issue at various times because of the shifting world situation, and does a very serious job of education.

The other side's job is much easier than ours. The only thing you have to present is the horrifying image of Americans at physical risk or American national security in risk. After that, you don't have to do a lot of explaining. It appears to be erring on the side of caution. It is not because sticking with the status quo will leave America behind technologically, and that will endanger our national security.

So I think that we have done this substance for a long period of time. The bill that is here is a reasonable and balanced bill. It

gives the President, at least in the drafts historically and I think in this one, enough leeway if there are national security reasons to take actions.

We also understand the political dynamic of giving administrations a way to reverse course if they have taken a wrong turn. It is very hard for an administration to do that. Congress needs to be here to help. I think that has been in there as well.

But I think the real solution is that industry needs to energize a reasoned and honest debate. This isn't about political muscle. That isn't going to work here. It is not about political action committees or other things that often get the focus in the news.

This is a matter that I think most Members take very seriously and if they are ill-informed, they will choose the other side. That is not to say that everybody on the other side is ill-informed. Some people have made a different judgment here.

But clearly, if a Member of Congress doesn't have the information that you two gentlemen have, and he is asked to choose between what appear to be the profits, short-term, for a company, and the national security of this country, I think virtually every Member, Democrat or Republican, will choose the national security of this country. So we need your help in making sure that the visits are made with the information as to why this makes sense.

Thank you.

Mr. ROTH. Thank you very much, Mr. Gejdenson.

Mr. GEJDENSON. That wasn't a question.

Mr. ROTH. Would either one or both of you gentlemen want to respond?

Mr. FREEDENBERG. I would note that many companies have had bad experiences or became discouraged from last year. And so your speech does not fall on deaf ears, I think.

It is a question of whether the new legislation leave them better off or worse off. And they are afraid that you will get some strange twist in the legislation, that what is actually a sound piece of legislation will end up being less helpful than the current situation with the regulatory reforms that have been carried out.

So I think that is part of—that is the burden that you carry in terms of getting this legislation through the process.

Mr. GEJDENSON. One quick additional question. Do both of you support the legislation as it has been introduced?

Mr. LEWIS. H.R. 361? Well, we were supporting it last year. We continue to support it this year. We recognize it.

Mr. ROTH. Thank you.

Mr. Manzullo.

Mr. MANZULLO. Thank you very much. A comment and then an exploratory question. One of the things I would like to see, especially the NAM do, is to localize the passage of this critical piece of legislation.

When the debate came up over NAFTA, I talked to the President on one occasion at the White House, to Secretary Bentsen, and to Mr. Brown. I said if you want to get NAFTA through, you have to localize it congressional district by congressional district. And we did that and set the tone of debate in the 16th congressional district, which is the tool and die center of the world and the fastener center of the world, in Rockford, Illinois. And once people can see

and once Members of Congress can see exactly what the EAA will do to their congressional district, we will get this passed.

Otherwise, the argument will be in the abstract and many Members, including many Members in the freshman class, will do exactly what Mr. Gejdenson said: err on the side of safety and vote against the EAA.

I cannot tell you how critical it is that all of the efforts of all the trade organizations will fall on deaf ears unless the visit to the Member's office is accompanied by somebody from that Member's district. At that point, it will get the ear of the Member, because we are talking about a tremendous number of jobs in our State. We are talking about 20,000 jobs for every $1 billion of exports. And if we are looking at $21 to $27 billion, that comes out to 420,000 jobs. And jobs involving exports, as you know, pay 17 percent more than those that don't involve exports.

And the real growth of this country since 1989 and the high-paying jobs, 70 percent has been in the area of exports. So we are talking about trying to create in this country the high-paying jobs that we are losing through layoffs in middle management.

Mr. Lewis, you have got a tremendous responsibility on your hands. Obviously we want to work with your organization to get this thing through.

The second thing is, Mr. Freedenberg, could you expand on your very interesting statement about taking a group of people to Europe and Japan to buy machine tools because of the United States' license requirements.

Obviously, I am interested in what is going on back home. I very much want to know what you meant by that remark and to elucidate further.

Mr. FREEDENBERG. Right. It was the Chinese that are at the current time modernizing and building both their aircraft and their automobile industry.

In the case of aircraft, one of the major aircraft manufacturers simply sent a letter to Cincinnati Millicron, which is the major machine tool builder for the aircraft industry, saying we would love to use your product. We have great respect for it, but we are not going to because we have had such bad experience with machine tools licensing in the United States.

And that in fact was a real problem. I have been a consultant to the machine tool industry, and I know for a fact that anything that is on the list, currently on the list, takes a very long time to get through the system. There are challenges, there are difficulties in the intelligence trying to figure out who the end user is, even if it is the largest U.S. machine tool builder and even if it is the largest manufacturer in China.

Mr. MANZULLO. Could you give us an example right now as to what would be on that list?

Mr. FREEDENBERG. Five-axis machines. There is a debate right now over whether these machines, even with lower accuracy, without getting into the great details, 10 microns, should be on the list.

The general consensus, including that of, as I understand it, the Energy Department, is there is no great concern about such technology having an effect on the nuclear area. But there has been an

endless debate about whether we include five-axis machines on the control list.

Meanwhile, the problem is that you can apply for a license, and that is where you have a difficult—a difference between the United States and Europe. In Europe—we both require licenses—but the Europeans get the license through the system very quickly. In the United States, it can take months. It can extend into years—at least a year.

And that just is too long for a country, for example, such as China, which is trying to buildup its industry quickly and where there is uncertainty on whether you will ever get the machine tool. So it is a hell of a lot easier to just buy it in a place where you think you will get the approval, than to take a chance on what you might consider to be a higher quality product in the United States, but where you might not get it in the end, and then your production line is slowed down.

Mr. MANZULLO. Let me interrupt you again. Could you explain to us what that five-axis machine is because this really points out how bad our problem is.

Mr. FREEDENBERG. Well, it is simply the number of axis on which you do the cutting. And there are two, three, four, five and multiple axis machines.

At the current time, the cutoff point is four axis, but the machine tool industry has made the point that there is not much difference between four and five axis. It is really the accuracies that count. And the experts tend to agree with that.

But getting agreement both within the U.S. Government and then getting that on the international list has been a great problem. And in the meantime, as long as we are licensing it and taking longer, we put U.S. manufacturers at a disadvantage.

Mr. MANZULLO. Is this simply a machine tool that cuts at five different angles?

Mr. FREEDENBERG. Right.

Mr. MANZULLO. When you take a block of steel and it goes inside the machine, it is like a globe. Does it simply cut it in different angles?

Mr. FREEDENBERG. Right.

Mr. MANZULLO. And there is a big problem with the export license of that machine?

Mr. FREEDENBERG. Right.

Mr. MANZULLO. Go ahead with your testimony.

Mr. FREEDENBERG. Well, it is simply that——

Mr. MANZULLO. So we are losing our market share.

Mr. FREEDENBERG. We have a perception, and it is very important in markets such as China, that if you want to get a machine tool, it is going to take you a very long time. And, in fact, it may not get approved.

As long as that perception exists—I saw the number in the Journal of Commerce, the Chinese are going to buy 17,000 machine tools next year. That is a lot of machine tools, especially if you are cut out of the market.

The U.S., even with those disadvantages, is increasing its market share. But they think that they could get an even larger share, and

they could get the more higher value-added share if we didn't have counterproductive export controls.

That doesn't mean you would simply decontrol everything, but you want to get everybody on the same song sheet and everybody playing by the same rules.

Mr. MANZULLO. So a four axis cutting machine is not controlled, but the five axis is?

Mr. FREEDENBERG. In general, yes.

Mr. MANZULLO. But the five axis is?

Mr. FREEDENBERG. Yes.

Mr. MANZULLO. That is outright stupid.

Mr. FREEDENBERG. That is what the contention of the industry is at the moment, yes.

Mr. MANZULLO. Now, the fifth axis, is that being controlled by regulation?

Mr. FREEDENBERG. By regulation, yes.

Mr. MANZULLO. Let's talk afterwards.

Mr. FREEDENBERG. OK, fine. Without getting into too much detail, that is the sort of thing that creates job loss, obviously.

Mr. ROTH. Mr. Bereuter.

Mr. BEREUTER. Thank you very much, Mr. Chairman. Gentlemen, thank you very much for your testimony. I appreciate it. I have a couple of questions.

The first one I think can be answered very briefly and it is very much a procedural nuts and bolts question. And I realize we are dealing in preliminary generalities today, very important overview, but not focusing so much on detail.

It is my understanding that various COCOM countries are currently refusing to agree to a minimum mandatory reporting requirement in dual-use items.

I would just like to know if that is true, and very briefly if there is anything else I should know about the fact, if it is true.

Mr. FREEDENBERG. Would you like me to respond to that? To lead off, I have been following the negotiations from the outside. Obviously I am not at the table, although in the past I was in—I did participate in COCOM negotiations.

From what I understand, we not only won't have a veto, we won't even get an accounting in a timely manner of what other countries are selling. That creates a great deal of suspicion. It makes it very difficult to get cooperation internationally.

And, in fact, it makes me wonder what the new organization is going to do. Because it is not going to be deciding on what goes that is embargoed, it is not deciding—it will decide on one list, then what is its purpose after that?

But the point is you are going to get great suspicion. You are going to get constant back and forth, not only from the United States, but from other countries, saying, well, they sold it, but how do they know that they sold it.

And it will be very difficult to operate, particularly when the United States is so careful and so thorough in its review. That is a very great danger for the future.

Mr. BEREUTER. Now, I am told that the European Union has recently abolished export controls, among its member states' trade transactions. If that is the case, what would be the impact in a di-

rect sense upon U.S. exporters and about our own control system and upon our own control system?

Mr. FREEDENBERG. Well, anything sold to any one of those countries can go to any other without any approval. So that is something that I have heard privately some concern, even among Europeans, because not all Europeans have the same level of export control rigor.

But that means that the best thing we can do in such a situation is have an agreed upon list, have an understanding, keeping it as short as possible, and having an understanding of what really needs to be controlled. Then maybe we can go back to them and get them to control from beyond the European Community. I don't think there is any way that we can control within the EU today.

Mr. BEREUTER. Now, a bigger question to which I would like the response of both of you, if I could have it, please, and three related questions or judgments.

What grade would you give the administration in negotiating a multilateral successor to COCOM? That is first. Secondly, is there an overreaching character in our multilateral goals? Are we overreaching? Third, what are the chances of getting such a multilateral successor to COCOM within, say, the duration of the 104th Congress?

Mr. FREEDENBERG. The first—the answer to the first is I would give them an incomplete. We have no basis for a grade. I used to be a professor, so I used to give those all the time. Keeps the pressure on. They have an incomplete. There is nothing to show at the moment. At the last high level meeting, there was no announcement and no result that we can tell.

Right now we are being held up by the fact that the Russians won't agree, and this is part of your other question. The Russians won't agree not to sell, or they won't agree to tell us what they are selling to Iran.

Mr. BEREUTER. You know, I used to be a professor, too, and we could also make some assessments about the student's progress by discussion in class, product, effectiveness. We didn't have to wait until the final paper was turned in.

And so I am asking you, how are they doing?

Mr. FREEDENBERG. Well, C minus to D, then, would be the interim grade. The Russians, we are in a situation where unless the Russians tell us what they are selling to Iran, we will not allow them into the organization. We are vetoing that.

However, the Europeans do not want to start the organization unless the Russians are in. So somehow we have gotten ourself in a situation where the new organization is dependent on Russian good behavior.

I wasn't privy to the negotiating strategy, so I don't know how we got to that point, but that is where we are. The danger then is if we don't resolve that issue, and remember the Russians don't have a great incentive to join the organization right now because there is not a clear benefit they get except for sort of a good conduct commendation.

The danger is that you create a hollow organization, that it won't do anything. You will have an organization, but it won't have any function and it won't have any power. That is what I fear. I can't

say that is going to happen, because we don't have the organization yet.

And in terms of overreaching, one of the problems is that you also want arms to be controlled by this new organization. That is a great objective. I think everybody would like to see that happen.

But the European Union is now an organization that controls a good part of the affairs of its member countries. One of the things it doesn't control is arms sales for those countries. And the individual countries see arms sales as a means of influence.

So it is difficult to get them to give that up to another organization, this new successor regime to COCOM. So you are asking for an awful lot. Maybe we will get it in this new organization, but that does slow down the negotiations and makes it much, much more difficult to reach consensus.

Mr. BEREUTER. Any chances of reaching agreement in the 104th duration?

Mr. FREEDENBERG. Yes, they ought to be able to do it. What they accomplish, though, is the question. And that is where the jury is out.

Mr. BEREUTER. Mr. Lewis, I would love to have your comments on this.

Mr. LEWIS. My grade, at first I was going to try the incomplete, but then I had a little more time to think about it than Paul. And basically stepping way back from the trees and taking a look at the forest, I think it is unsatisfactory, the direction we are moving in.

Essentially, as you recall in my answer to Congressman Roth, the number one objective of business is to have a system that emphasizes multilateralism. Whether you look at it from the commercial standpoint or the military standpoint, that should be our objective.

What we seem to be headed toward is a loose unilateral system in which our companies are going to be put at a significant disadvantage, largely because of this chart on the last page, that can hang up and debate issues endlessly. So I think the grade is unsatisfactory, that would be a D, right, Paul?

Mr. BEREUTER. Are we overreaching?

Mr. LEWIS. I don't really—I haven't followed the specifics of the negotiations that closely in terms of specifics, but it does seem to me that the history of these negotiations with the U.S. is that basically people are very—become very leery of entering into them with us because they give us a means of interfering with their commercial affairs with the rest of the world.

So probably lowering our expectations of trying to get something in place and building upon that would be a good approach. I can't really comment on the specific.

Mr. FREEDENBERG. Let me add one thing. With regard to overreaching, the problem we have is we are also trying to have a tighter embargo on Iran particularly, because everybody is embargoing Iraq right now and North Korea.

Iran right now, we cut off almost everything that is licensable and down to the terrorist licensable. Our allies don't. They were not eager to do so. They have, as an example that was just in the paper the other day, Airbus can continue—has the option of selling to Iran.

Under current law, the United States does not allow U.S. companies, Boeing and McDonnell Douglas to sell in Iran. There is a great interest in creating a U.S. veto over the Europeans. But there is not much knowledge of what is going on in negotiations.

Right now Airbus hasn't sold planes, I was surprised to find out, but they have every right to do so. And that is similarly true in areas of power equipment, in a number of other areas. So we have essentially cut ourselves off from a market, and the objective of this regime is to further cut Iran off, which tends to slow down agreement within this regime.

Mr. BEREUTER. Thank you. Mr. Chairman, if I could just conclude with just a short personal set of remarks. You and I have moved through the committee structure together in banking and foreign affairs. We sit side by side frequently and sometimes one doesn't say to a close colleague what he should.

And I don't want it unstated that I congratulate you on taking the Chair of this subcommittee and the agenda that you set out and the way that you are preparing to approach the difficult work we have ahead. And chairing the Asia Pacific subcommittee as I do, I look forward to a number of joint hearings with the Trade Subcommittee that you chair because I think that a lot of our potential, as well as some of our problems, exist in that part of the world.

But, congratulations, and I will do my best to be a full participating Member under your committee direction.

Mr. ROTH. Well, thank you, Mr. Bereuter, that is very gracious of you and the feeling is mutual.

Mr. Engel.

Mr. ENGEL. Thank you, Mr. Chairman. I want to offer my congratulations as well. I would like to talk briefly about the encryption issue specifically.

As you know, the current law forbids the export of computer software or hardware with advanced encryption technology. The Department of State and the National Security Agency argue that it poses a threat to national security if acquired by terrorists. We were very supportive of legislation to change it in this committee last year, which ran into some difficulty in some other committees.

According to the Software Publisher's Association, there are about 400 items produced and sold abroad by non-American manufacturers which contain advanced encryption. In other words, if a bad actor wants to buy software or hardware with encryption, he can do so unimpeded even though U.S. firms are prevented.

I would assume that you would support changing U.S. law to permit the export of computer items containing encryption technologies, but I would like to hear both your comments on it.

Mr. FREEDENBERG. Yes, I would. The problem will be judgments. And the problem with the judgment is that it is hard to judge from the outside what is available. I tried, on my own, not representing the software publishers or the computer manufacturers, to find out what European laws were with regard to this. They won't tell you. You don't know what is available.

We know that there are some encryption programs available outside of the former COCOM members. But it is an extremely difficult area. So you really want it, even though we know some of it

is available on the Internet, we also know that some of it is available in U.S. shops, if you are smart. You can go out and buy it in our country and not declare it, since it can be put in a briefcase.

So we know that it is widely available, but we don't know what the licensing authorities, how the licensing foreign authorities deal with this. It is very, very difficult to do. U.S. companies have made inquiries abroad. But it has not going to be an area that you are going to be dealing with a lot of facts, or that you are going to get cooperation from allies.

Nonetheless, certainly on many, many mass market software programs, they are widely available. The point of controlling them escapes me, and there is a danger that you will drive it offshore. Then you will get more and more encryption in the future from abroad. That is a certainty, because everybody wants it as a feature. Certainly companies want it as a feature.

And you will drive both software manufacturers offshore, because that is the only way they can produce it and export it in large amounts, and you may even drive some computer manufacturers offshore, and chip manufacturers, by the way, because encryption can now be put on a chip.

So it is going to be a growing problem. It has been a problem for quite awhile, but it can grow exponentially. It is a problem that has not been resolved to date by this administration. But it is a problem which will be debated, unfortunately, in the dark certainly for the foreseeable future.

Mr. LEWIS. Yes, the NAM would like to see changes in the rules that are applied to mass market software, which, as I mentioned in my testimony, is still treated as a munitions item. Basically, as we rely more and more on electronics as a means of communicating, it is important not only to individuals, but obviously to businesses to have secure links of communication. And therefore encryption is going to be a vital issue there. So we would like to see changes.

Mr. ENGEL. It is our understanding that two-thirds of all items controlled by the nonproliferation export control regimes are available in comparable quantity outside the regime.

How should legislation treat the issue of foreign availability?

Mr. FREEDENBERG. Well, I think there is a danger. I will tell you one thing, it is going to be more and more difficult to control these things, particularly in the regime I just described, because it is going to be national discretion.

I had to deal with the issue of Toshiba when I was Under Secretary. We certainly sent a chill through the Japanese by passing that legislation, and we also created some great disunity within COCOM, perhaps leading to the current situation.

On the other hand, I think there is going to be a great temptation on the part of Congress to have some sort of sanctions built into noncooperation. And I have great trepidation about that, because it can lead to even more troubles than it solves. And it is going to be hard, particularly when you don't have an agreed set of rules.

In the case of Toshiba, you at least had a set of rules they were breaking. They definitely broke the rules as it turned out with a

machine tool the number of axes you could have on machine tools. But you won't have those same standards in the new regime.

So I think there is a great, great fear that we are going to create all sorts of trade problems. And I would just caution the Congress in dealing with this to resist the temptation to build sanctions into everything that you do.

On the other hand, there may be sanctions that are left to the discretion of the administration that would make some sense in order to get some discipline in the international system.

Mr. LEWIS. I remind you, Mr. Congressman, that H.R. 361 does have an emphasis on trying to bring nonregime members into regimes, primarily by providing carrots in terms of how their exports would be treated within the regime. Although there are some sticks, particularly in terms of how a member regime would be sanctioned versus a nonmember regime.

So the legislation that this committee was considering last year attempted to deal with that. I would also add that in industry's efforts in the two preceding years to come up with a means of encouraging companies—or countries outside of the regime to join, we dealt with that for a long time. It is a very difficult issue and it is a very difficult issue to figure out how to get people to join up, if you will. But I think 361 does have some means to help address that problem.

Mr. ENGEL. I would like to just ask one question about reexport controls. If other countries make virtually everything that is made in the United States, what is the use of reexport controls?

Mr. FREEDENBERG. I dealt with that in my 47 pages, talked about the—nobody read it, but it is—it is in there. It is the——

Mr. ENGEL. It will be good bedtime reading for me tonight.

Mr. FREEDENBERG. No, no, I didn't expect you to read it this morning while you were getting ready for the hearing. Re-export controls have cost U.S. industry dearly, because particularly U.S. industry is frequently a component maker for other country's products, and I had the horror story of all time at Commerce company that was going to lose one-third of its market overseas because of reexport controls. The product, they were going to lose $60 million worth of business. That is what really spurred the Baldridge reforms.

If most of the products, as I pointed out in my oral testimony, are made abroad, for us to create a new set of controls which was a proposal in the last Congress, would be very, very deleterious, particularly to U.S. computer makers, to U.S. scientific instrument makers, and to U.S. semiconductor production. Also, semiconductor producers, because they would be cut out of foreign products.

One of the things that happened, which Howard pointed out, was that Airbus changed its component suppliers because of U.S.—because of U.S. foreign policy controls that created reexport controls.

So we have a real danger of a long-term cost, and I think that has to be measured against any reexport controls that we might impose.

Mr. LEWIS. Reexport controls, I don't think, recognize how the commercial world operates these days and they increasingly have little utility.

Mr. ENGEL. Thank you. Thank you, Mr. Chairman. I just want to say publicly I want to thank you for reintroducing the Export Administration Act reform and I want to work with you, cooperate with you on that.

Mr. ROTH. Well, thank you, Mr. Engel. It is going to be a pleasure to work with you. As I have mentioned this morning, we are going to pass this legislation this year. We are giving it everything we have got. So your help will be most appreciated.

Mr. ENGEL. Thank you.

Mr. ROTH. Mr. Chabot.

Mr. CHABOT. Thank you, Mr. Chairman.

Mr. ROTH. Nice to have you. You are a new Member of our subcommittee and it is nice to have you with us.

Mr. CHABOT. Thank you. Pleasure to be here. And in the interest of time, I will be very brief, just make a brief comment.

My district is Ohio, 1st district, which is Cincinnati. And, Dr. Freedenberg, when you talked about Cincinnati Millicron, you got my attention. I got sworn in about three weeks ago, and about a week before getting sworn in, I toured Cincinnati Millicron. I have a lot of folks that I know very well that work there in different capacities.

And in addition to that, you talked about the Airbus and the loss of jet engine sales, et cetera. General Electric also is in Cincinnati, and thousands of employees over the past couple of years have been laid off. And I just wanted to say that whatever I could do to reduce impediments to exports and thus bring jobs to Americans in my district and all over this country, I intend to do that. And I intend to work very closely with both Republicans and Democrats and the administration in accomplishing this.

Thank you for your testimony this morning.

Mr. FREEDENBERG. I only note that I was looking at a map of where Boeing does its subcontracting, and number one in the country was Ohio in terms of its components that go into a Boeing export. So Ohio is very much affected by that and affected by any new limits on machine tool builders, which as I pointed out are the most tightly controlled under the current regime.

Mr. CHABOT. Right. Thank you very much.

Mr. ROTH. Thank you. Before we adjourn, why don't we ask you how you feel about the current process of reviewing export license applications? Are they adequate?

Mr. FREEDENBERG. In terms of time, no. I have had very bad experiences. I would say I have had even worse experiences with the State Department munitions system, which is why there is so much complaint about the encryption issue, because it is a munitions item, not a dual-use item.

But the big area of problem right now is China, as I pointed out. It is not Russia, because Russia is not buying anything, and it is not the Middle East and particularly Iran and places like that, because very few companies want to sell to those locations. They don't want to get caught up in it.

So the real problem is China and the time it takes to approve to China. That needs improvement, but I know that Mr. Reinsch is working on that. I think there has to be a simplification of the process, and I think that is what your legislation aims at. I hope

you can work with the administration to come up with a simplification.

Mr. ROTH. Mr. Lewis——

Mr. LEWIS. Could I answer—could I make a comment on your question right there?

Mr. ROTH. Yes. When you do, would you also tell us how you would change this chart as it relates to time elements?

Mr. LEWIS. Sure. First of all, in regard to your question about licenses, I actually got a call on Sunday afternoon to testify, so I had a lot more time than Paul to prepare.

And so I made some calls yesterday and one of the things I found out was that 60 percent of the licenses now going into Commerce are being referred around this chart which actually is a good lead in to your second question.

How would we like to see this chart changed? Industry's proposal came right out of the National Academy of Sciences' reports in 1987 and 1989. And basically, what we wanted to see happen is to essentially have a policy group which included all the relevant agencies, Defense, Treasury, Commerce, State, whatever, and their responsibility would be to establish the parameters of your policy in regard to a particular product or a particular nation.

But once those parameters were set, we wanted, as did the NAS recommendation, that one agency be in charge of the day-to-day running of the system. Notice I am making a clear distinction I think between the policy issue and the regulatory issue. And so essentially a lot of this chart would disappear and you would have policy decisions being made by many of the same actors in regard to a particular nation or technology, but once those decisions had been made, you would then centralize the regulatory system within the Commerce Department.

And I would—I would be glad to provide you with the relevant sections of the NAS report, but industry came down clearly on what the National Academy of Sciences was recommending. And I think—I think it really is an issue that this committee might fruitfully look into in the next month, in terms of examining all of these players.

I mean what resources are we spending in each case? How many people are working in these departments? You know, what is their contribution to the licensing process? For example, I think Paul will remember that after the 1985 act, in either 1986 or 1987, the Congress asked the GAO to study license referrals from Commerce to Defense, and it essentially asked the question what was Defense bringing to the table.

And as I remember, the basic conclusion of the GAO report was not much. There were very—most of the licenses went over and they came back. I think, you know, that type of an examination where you move from facts and figures down to maybe admittedly more subjective issues of what are each of these agencies that are getting all these 60 percent of the licenses, what are they doing, what are they contributing.

You know, why do we need all these bureaucrats looking over each other's shoulders? In the manufacturing community, that used to be the approach to product control, product quality. You had the person on the production line and then you had the quality control

managers that inspected the stuff and looked over the shoulders as it came off the line.

Well, the manufacturing community gave that up 10, 15 years ago, and basically went to do it right the first time. I guess my question for you would be to examine that issue in terms of this chart. You know, why can't we set up a system where the licenses are just done right the first time and they don't have to be referred around to numerous other agencies?

Mr. ROTH. Well, let me ask you: in the National Academy report, were Secretary Perry and the Assistant Secretaries and Deputy Secretaries from DOD involved?

Mr. LEWIS. They certainly were involved in the second report, yes. In both reports, numerous people that are currently in the administration were involved in those reports, you are right.

Mr. ROTH. So you would think that if they were involved, that they would sign on to that.

Mr. LEWIS. You would think so.

Mr. ROTH. OK. It is now——

Mr. LEWIS. I probably made enough enemies today by giving the State Department a D for the international negotiations, so I better not have Defense mad at me, too.

Mr. ROTH. It is now a little after 12 o'clock. Any other questions?

Mr. Manzullo wants a short question.

Mr. MANZULLO. Just an astounding statement. This past year we had the Consul General from China come to Rockford. He spent an entire day there. And he said something that I can't fathom the extent of the commerce that will come from it.

He said, Congressman, China has 300 cities that have an excess of 1 million people. Only 25 of those cities have airports and our goal is to build an airport at every single city. He just said that.

And here I am with the Woodward Governor and Sunstrand and other manufacturers, thinking of the tremendous amount of commerce. It is astounding. I just don't think people realize what this country is missing out on.

I even heard a comment that the Pacific Rim either is or shortly will be responsible for 60 percent of all commerce in the world. And here we are, having a tremendous conversation, and yet you can almost draw a graph on that wall of the jobs that are leaving this country.

I just want to thank you for the tremendous contribution that you have made today at these hearings.

Mr. ROTH. Thank you very much, gentlemen, for your excellent testimony. We appreciate your testimony today. And we are very much going to appreciate and look forward to your help in passing this legislation. Thank you very much.

[Whereupon, at 12:08 p.m., the subcommittee was adjourned.]

APPENDIX

REMARKS BY THE HONORABLE DON MANZULLO

BEFORE THE

SUBCOMMITTEE ON INTERNATIONAL ECONOMIC POLICY AND TRADE-

JANUARY 25, 1995

Mr. Chairman, I have the unique privilege of representing the 16th Congressional District of Illinois. Rockford has over 980 factories and is perhaps the most highly industrialized per capita city in America. Rockford is the manufacturing leader in fasteners, automotive parts, and tool and die production. It has aero-space industries and emerging high-tech companies.

Several years ago, one of Rockford's factories built a two million dollar machine, which was controlled by a high tech computer. The government approval for shipment of the machine took so long that the order was almost cancelled, which would have resulted in disaster for this Rockford company. Last year, I introduced an amendment to the proposed Export Administration Act went a long way in making sure that a horror story like this does not again occur.

I support a total decontrol on computer-related exports with the exception of a continuing ban on sanctioned countries. Study after study shows that computers are increasingly irrelevant in controlling the spread of weapons of mass destruction. With over 140 billion semiconductor chips manufactured annual in the world

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and with the close interconnection of computer technology throughout our modern society, it is time to redirect the focus of export controls on technologies more directly linked to the production of weapons of mass destruction. That's why I strongly supported last year's Export Administration Act rewrite as passed by the Foreign Affairs Committee.

My provision inserted last year would have provided for distribution licenses for computer exports above the decontrol level but below the supercomputer level for every country in the world except sanctioned nations. The Administration decontrolled computer exports up to the 260 MTOPS level, which is equivalent to an IBM Workstation. The supercomputer level has been worked out with our allies, mainly Japan, to 1500 MTOPS.

The real-world application of my amendment would require distribution licenses for those computers with a power of between the 260 and 1500 MTOPS to the emerging democracies of Eastern Europe, the former Soviet Union and also China. Distribution licenses would simply require the Bureau of Export Administration (BXA) spend 30 days investigating first-time foreign customers buying a specific U.S. product. Once BXA certifies the end-user, a U.S. exporter can ship unlimited amounts of their approved products to a specific person or company.

This is a much different and welcome change from current regulations. Right now, U.S. exporters must obtain permission from the BXA to ship products over the 260 MTOPS level each time they wish to sell to foreign customers under an individually validated license, which can take weeks, if not months, to approve. Adoption of my amendment would break the log-jam of red tape at BXA and free up resources to target problems truly of concern to stopping the proliferation of weapons of mass destruction.

My amendment did not impact supercomputers above the 1500 MTOPS level. Individually validated licenses would still be required for each sale of computers at this level.

My amendment also did not impact other sections of the bill, which I strongly support, that removes controls on mass-market computer equipment. If the export quantity of a specific computer model reaches above 100,000 units over a 12 month period, then no export license, including distribution licenses, would be required.

My amendment reaffirmed current law in that no export license would be granted for terrorist or embargoed countries. The amendment defines them as sanctioned countries.

No licenses would be approved for bad end-user countries such as Cuba, North Korea, Libya, Syria, Sudan, Iraq, Iran or Yugoslavia or for those individuals or companies denied trading privileges because they are involved in the development or production of weapons of mass destruction.

The second part of my amendment asked for a National Academy of Sciences study into the policy implications of total decontrol of computer technology. This study would take place over a nine-month period, gathering the best minds on this complex issue to come to some conclusions on this subject. The recommendations from this study could form the basis of a review of export controls sometime in the future the next Congress.

This amendment had broad-based support among many industries and companies, particularly those interested in export-control reform including the Electronics Industries Association. I was pleased to see that this provision was reinserted in the newly introduced Export Administration Act rewrite by my Chairman, Mr. Roth (HR 361). I hope that we can act on this legislation quickly so that legal challenges will not be mounted to the emergency powers invoked by the President to continue our export control system.

I look forward to the testimony of the witnesses here today to learn of their recommendations on how we can pass an EAA rewrite as soon as possible. Thank you, Mr. Chairman.

Dr. Paul Freedenberg

International Trade Consultant

Baker & Botts, L.L.P.

Mr. Chairman, members of the Subcommittee, I am honored to be chosen as one of your lead-off witnesses on the subject of the re-authorization of the Export Administration Act. I first dealt with this issue in 1979, as member of the minority staff of the Senate Banking Banking Committee, as we considered proposals to adapt export controls to the challenges of the 1980s. That law, which was revised in 1985 (after a 10 month hiatus during which the International Emergency Economic Powers Act ["IEEPA"] had to be invoked) and again in 1988 as an amendment to the Omnibus Trade Act, is, in essence, the same Act that our Government utilizes as its basic authority to control exports today. While regulations can be cobbled together to adapt it to the current world situation, the Act is badly in need of revision. Moreover, the 1990s have seen our nation operating under the emergency powers of IEEPA for a longer period of time than under the authority of the Export Administration Act. Clearly, the time has come to take a dispassionate look at this issue. I am confident that the Congress can devise a law that controls dangerous exports while preserving our nation's international competitiveness.

Mr. Chairman, we cannot and should not duck this issue, and you are to be commended for introducing H.R. 361, based on the legislative work done during the 103rd Congress. I believe that H.R. 361 is an excellent starting point for consideration of the new Act.

You invited me, Mr. Chairman to testify before this subcommittee on the history of export controls in the post-World War II world, drawing on my experience as a former Assistant Secretary for Trade Administration and Under Secretary for Export Administration in the Administration of President Ronald Reagan. You also asked me to discuss the manner in which the environment for export controls have changed in the post-Cold War world and what suggestions I might have regarding the re-authorization of the Act.

Since this hearing was called on short notice, I have taken the liberty of drawing on earlier work that I have done. For the post-war history of export controls, I have drawn heavily on research that went into a chapter that I wrote for a book on export controls by Professor Gary Bertsch and Steven Elliot-Gower of the University of Georgia, *Export Controls in Transition* (Duke University Press, 1992). I have also drawn on testimony that I delivered before this Subcommittee during the last Congress. In doing so, I have endeavored to adapt this earlier work to the current issue at hand.

As we sit here today, the United States Government is attempting to create a new multilateral organization to deal with export controls that would include Russia, our former enemy, within its membership. Unfortunately, given the attitudes of our allies, based on what they considered to be a U.S. domination of the Coordinating Committee on Multilateral Export Controls ("CoCom"), we must reconcile ourselves to the creation of a new organization that will not have anywhere near the discipline, the structure, and the coherence that CoCom had. Most importantly, it has been agreed that the new organization will not have the single member veto that its CoCom predecessor had. That means that the United States will not be able to block exports to target countries by other members of the new organization, even if the U.S. Government considers those exports dangerous or contrary to the new rules. In fact, we will be lucky if the rules of the new organization are as strong as the rules of the current anti-proliferation organizations, such as the Australia Group (on Chemical and Biological Warfare) and the Missile Technology Control Regime. These are organizations that have a list of dangerous products that members have pledged to control but which lack a secretariat, regular

meetings, or tight rules about licensing procedures. They lack discipline of CoCom and operate in the manner of a "Gentlemen's Agreement."

The prospect of this arrangement governing multilateral export controls for the balance of this decade is not reassuring to U.S. exporters. They fear that the United States will get the worst of two worlds, with U.S. companies losing sales but target countries still able to obtain products from alternative sources.

To further complicate matters, the pace of technological change has, if anything, increased dramatically in recent years. The result is a world which bears no resemblance to the one on which our export control policy has been based for the past 45 years. It will be difficult to adapt the Export Administration Act to this new world. Allow me to briefly sketch the history of export controls during the Cold War and then provide a portrait of two industries with which I am familiar in order to give you an idea of just how difficult the new technological environment makes the task of control.

Along with NATO (the North Atlantic Treaty Organization), CoCom was at the core of the post war struggle with the Soviet Union that came to be known as the "Cold War." This non-treaty organization, which was organized by the United States in the same year as NATO and the Berlin Air Lift (1949), has had remarkable success and stability over its four-decade history.

The premise was a simple one. Since the Soviet economic and technological base was not able to produce weapons systems and technology of a sophistication equal to that of the Western Alliance, it was in the interest of the United States and its allies to deny the Soviets the technological tools to close the gap. That was particularly important, because, after the Western

defense build-up of the early 1950s, it was decided not to match the Soviet Union and its Allies man-for-man, tank-for-tank, or plane-for-plane, but rather to rely on the technological superiority of Western weapons systems as the means of offsetting the numerical superiority of the East. Our strategy was based on the force-multiplier effect of Western technology.

This strategy served the United States and its Allies well. In the few examples of head-to-head confrontation with Soviet weapons systems, Western technology was the clear winner.

In 1982, Israel and Syria engaged in an air battle over the Bekka Valley in Lebanon. The Syrians flew Russian MIG-21 and MIG-23 jet fighters, while the Israelis flew U.S. F-15s and F-16s. At the end of the engagement, the score was an impressive victory for Western technology: 81 Syrian fighters were shot down compared with a single Israeli fighter lost to ground fire. Certainly, a great deal of credit must be given to the excellence of the Israeli pilots and their ground crews. However, the sheer magnitude of the numbers demonstrates the clear superiority of the U.S. weapons and their command and control systems.

Similarly, the success of the 1986 attack on Libya was due in part to the ability of U.S. electronic countermeasures to silence Libya's Soviet-supplied air-defense weapons systems. Once again, credit must be given to the American pilots and their support crews. It was U.S. technology, however, that was the decisive factor.

As a final example, the face of the war in Afghanistan changed dramatically after U.S. hand-held Stinger missiles were supplied to the rebel forces. The effectiveness of Soviet air power and the willingness to commit helicopters to combat was significantly diminished by the presence of American technology.

The First Three Decades of CoCom

From its very beginning in 1994, there were disputes among the Allies in CoCom as to what was the proper level of strategic trade control. Not surprisingly, the United States, with the lowest percentage of its economy accounted for by foreign trade and without a historic record of significant trade with the Soviet Union or Eastern Europe, was the most conservative in its approach as to what ought to be controlled and what constituted strategic trade. Throughout the first decade of CoCom there were constant disputes as to the scope and the criteria for the embargo list. Japan joined CoCom in 1952, after signing its Peace Treaty with the United States, and from the beginning it sided with the Europeans who wanted to restrict the list only to that which would have direct military value to the Soviet Union. For its part, the United States Government wanted to include products that could contribute to Soviet economic recovery and growth. With its economic preeminence and alliance leadership unchallenged, the U.S. invariably won the CoCom debates in favor of conservatism in defining what constituted a strategic, dual-use product or technology.

This almost total embargo imposed by CoCom continued through the 1960s, with the organization going about its work quietly and with comparatively low-level bureaucrats making list review and licensing decisions at CoCom headquarters in the U.S. Embassy Annex on a back street of Paris. There was very little dispute and very little attention given to CoCom, considering the fact that it was responsible for coordinating such a massive embargo of the Soviet Union and its Allies and, in the process, was compelling the Western Allies to license tens of billions of dollars of trade among themselves and the rest of the world.

By the end of the 1960s, however, U.S. companies began to complain about being shut-out of Soviet and East European markets, and the Export Administration Act of 1969 reflected a relaxation in what had been, until then, an almost total embargo on technological trade with the Soviet Union. The policy of *detente* initiated by President Richard Nixon and his National Security Advisor Henry Kissinger was premised on the assumption that a web of economic relations could be constructed in such a way as to ensnare the Soviet Union into a more peaceful attitude by orienting them toward economic rather than military competition. While this policy did not achieve its objective, before it ended in 1979 -- with the Soviet invasion of Afghanistan -- it caused a profound change in the U.S. Government's behavior in CoCom. Not only did we take a more indulgent attitude towards our Allies' trade with the East, but by the middle of the decade we had become the leading requestor of exceptions from the embargo list, with 57 percent of all requests in 1976 and 63 percent in 1978. With the U.S. taking such a strong position in favor of exceptions to the list, the Allies followed suit with enthusiasm.

During this period of laxity in CoCom, suspicions began to surface that the U.S. was using CoCom for commercial purposes. Since it was the leading requestor of exceptions, the U.S. Government tended to lose its moral platform when it exercised its veto with regard to the requests of its Allies. Nonetheless, the idea that the U.S. Government ever used its CoCom veto to gain advantage for an American firm would be met with incredulity by U.S. companies, who were uniformly convinced that their government was the most severe in judging U.S. commercial products and technology against CoCom standards and consistently erred on the side of caution when making export licensing and CoCom decisions. By contrast, these same firms would argue that their competitors in other CoCom-member countries would consistently get the

benefit of the doubt if their product was at or near the margin of the CoCom cut-off line. The fact that throughout this period the U.S. Government exercised unilateral controls on dozens more products and technologies than any other member of CoCom tended to refute the accusation of a commercial purpose behind U.S. policy in CoCom.

Combined with suspicion and assumptions of bad faith was a high degree of laxity in enforcement characterizing both the United States and its Allies during the 1970s. The U.S. Government, which was reputed to be the most serious about enforcement of its export control laws and regulations, actually put very few resources into this effort. The Commerce Department, as the lead agency in the effort, had less than a dozen agents handling enforcement and, in general, the prevention of illegal technology transfer seemed to have a very low priority and few resources devoted to it during this period.

Reagan Administration Technology Transfer Policy

The Reagan Administration took office determined to reverse this trend with regard to technology transfer. President Carter had already announced an end to the practice of approving exceptions to the CoCom embargo list in March, 1980. This was done in response to the Soviet invasion of Afghanistan. President Reagan, however, enshrined this "no exceptions" policy as the centerpiece of a new CoCom policy that would see a complete reversal of the U.S. technology transfer policy of the 1970s. The theme of *detente* was already dead, but the theme of the Soviet Union as the "evil empire" fit into the new President's policy of strengthening U.S. and Western defenses and of putting particular reliance on Western technological superiority to gain advantage over the Soviet Union. In addition to the enormous defense build-up, President

Reagan embarked on a significant strengthening of export licensing and enforcement, which resulted in a tripling of the Commerce Department's budget and resources devoted to preventing illegal technology transfer. Similar increases were made at the Defense Department and the Customs Service. Reagan's Secretary of Defense, Caspar Weinberger, argued that this was necessary so that the Soviets would no longer be able to offset Western technology superiority by means of theft and espionage of technology and secrets.

Central Intelligence Agency and Defense Department analyses had already documented the significant extent to which the Soviet military had taken advantage of illegally acquired Western technology. Captured documents revealed more than 3,500 successful incidents of technology theft over the previous five years and detailed plans for continued activity. The evidence suggested that during the decade of the 1970s the KGB had made the acquisition of Western technology one of its primary tasks.

Contemporaneous with the Soviet drive to acquire Western technology was another equally significant development. During the 1970s, the U.S. lead in many aspects of high technology dwindled or disappeared. For the first time in the post-war era, U.S. high-technology firms saw their foreign markets taken away by aggressive new competitors, and even their domestic market share challenged. This meant that export controls and other constraints, which served as a nuisance in earlier times of unquestioned US. high-technology dominance, could possibly make the difference between holding on to an important market or losing it, or the difference between penetrating a lucrative new market or forfeiting it to a foreign competitor.

America's reliance on qualitative superiority made it uniquely dependent on the innovative capabilities of high-technology industries for national security. To maintain battlefield

advantage, it was not enough to make marginal improvements in weapons systems. Rather, it had to develop weapons with capabilities that may have been thought impossible five years before. This technological "leapfrogging" can only be accomplished with a healthy and vigorous high-technology industrial base. Unfortunately, by 1980 the procurement requirements of military agencies were no longer sufficient to guarantee the vitality of that critical national resource. This was a distressing change from the situation during the 1960s, when military purchases alone were sufficient to maintain our high-tech industrial base. At that time, the U.S. military accounted for 100 percent of the demand for the most advanced integrated circuits, and represented 50 percent of the domestic demand for semiconductors. During the decade of the 1980s, military procurement represented less than 10 percent of that market.

More alarming was the fact that the Department of Defense was no longer a leader of technological innovation. Formerly, the development of advanced weapons systems provided many spin-offs to the civilian market. During the past 20 years, the opposite has been the case; advances in civilian technology provide spin-offs to military weapons and command and control systems.

U.S. weapons systems deployed during this period incorporated electronic components that were up to eight years behind the state-of-the-art available in civilian products. Few military systems incorporated advanced 16-bit microprocessors such as the Intel 80386, which is the heart of the now obsolete IBM Personal Computer. This role reversal for the Department of Defense created a real dilemma for national security strategists.

Since 1949, one important of U.S. security strategy was the control of exports of high technology in order to keep them out of the hands of the Soviet Bloc. Originally, the

strategy was to err on the side of caution and keep export controls fairly tight -- the rationale being that since the United States was the largest market for high-tech products, the commercial and competitive effects of controlling exports would be minimal. This idea was supported by the fact that technology had not diffused widely in the world economy, and U.S. producers had the dominant market position.

That changed dramatically during the 1980s. Advanced technology diffused widely throughout the world, and U.S. producers had to compete against strong foreign competitors in a truly global market. From 1981 to 1985 alone, the growth in world trade for five critical high-technology industries (computers, machine tools, aerospace, telecommunications equipment, and microelectronics) increased 35 percent. The U.S. share of exports in these industries was under constant attack. In 1981, the U.S. accounted for nearly 26 percent of world exports of microelectronics, while by 1985 that figure had dropped to just over 23 percent. Similarly, for computers the U.S. had nearly 41 percent of exports in 1981, but by 1985 it had dropped to just over 32 percent.

The dilemma faced in the area of national security export controls was rather simply stated: since national security was dependent on the ability of high technology industries to innovate, and since technology innovation depends on the ability of those industries to compete successfully in a global market, what was the long-term benefit of unduly restricting access to those markets with export controls?

This dilemma engendered a debate within the U.S. Government that continued throughout the Reagan Administration. The two sides of this debate were genuine in their concern for preserving national security. Unfortunately, however, their concern took them in two

diametrically opposed directions. One side argued that any contribution to the Soviet economy, even if it was directed solely to the civilian sector, undermined the national security of the United States. This view was based on the assumption that Western contributions to the Soviet civilian sector allowed Soviet economic planners to divert their own scarce resources to military purposes. This was generally the position of the Defense Department under Secretaries Caspar Weinberger and Frank Carlucci.

The other side held the view that some level of non-strategic trade with the Soviet Union was inevitable; because the United States could not unilaterally affect international trade and because of the wide diffusion of advanced technology. Accordingly, they urged national security planners to focus their attention on that technology which would make a direct and significant contribution to Soviet military capabilities. Commerce Secretaries Malcolm Baldrige and C. William Verity were identified with this view.

Of course, both arguments had validity. It was unassailable that any contributions to the Soviet economy would raise the level of basic industrial capability. It was equally true, however, that the United States could not single-handedly control all Western trade with the Soviet Union. The latter point was well demonstrated by the fact that many Western European Governments indicated their support for an increased level of trade between their countries and the Soviets.

The fundamental questions revolved around how the United States maximized its influence over Western trade and technology transfer with the Soviet Union in order to minimize the adverse national security effects of such commercial activity. Within this

minimization/maximization analysis, an important question was: what was the definition of "any acceptable level of risk."

In some areas of technology, the unacceptable risks were rather easy to define. For example, there was unanimous agreement within the U.S. Government that the diversion of even a single very advanced computer (a so-called "super-computer") to the Soviets would present grave national security concerns.

As a consequence of these perceived risks, the export of super-computers was subject to an extremely restrictive control regime. The purchaser of such a device had to agree in advance to certain limitations on the use of the machine. In addition, the host government had to agree to assist the U.S. Government in policing how the machine was used. Without these assurances, the U.S. Government would not agree to the proposed export. Below the level of advanced computers, telecommunications, and semiconductor manufacturing systems, however, defining an acceptable risk was anything but easy.

The other element that needs to be factored into the analysis of risk minimization is the fact that the United States would not, by itself, control the flow of high-technology to the Soviets. Maintaining the technological advantage required the close cooperation of all the CoCom Allies. CoCom operated on the basis of the consensus of its members, which meant that all members had to agree on the level of technology to be controlled. Consequently, every proposal to add or delete an item from the list of controlled technology had to receive unanimous agreement.

By the 1980s, the international list of controlled technology had become an extremely technical document, identifying specific types of products (such as computers) which

member countries had agreed to subject to export controls. The controls on products were defined in terms of technical performance parameters. The list prescribed the performance level above which an export to the Bloc had to be submitted for full CoCom review. If any country objected to a proposed export, the license had to be denied Exports of products below that level could be approved by the exporting country as a matter of national discretion.

The veto power of CoCom members over individual exports was a rather extraordinary limitation on the sovereignty of the other members. It was all the more remarkable since the organization operated on an informal basis without the benefit of a treaty or other formal instrument.

From the beginning of his tenure as President Reagan's Secretary of Commerce (1981-1987), Malcolm Baldrige called for a radical reduction of the CoCom control list. The number he most often used to quantify this radical reduction was 40 percent. The Defense Department, however, was in no mood for radical reductions--or streamlining, as it was called--of the list. Commerce Department proposals for list reduction invariably were reduced to minor technical adjustments to commodity definitions of items on the list and little reduction resulted from repeated proposals. An alternative to reduction of the overall list was proposed in February 1987 as the so-called "Baldrige reforms." The concept put forward was to resolve the impasse with the Defense Department by focusing on the reduction of the number of products that needed validated licenses to Western destinations, rather than trying to reduce the size of the overall list. The particular advantage of this approach for Secretary Baldrige was that West-West trade was an area over which his department had almost complete jurisdiction (while Commerce and Defense shared authority for licenses to the East).

The theory behind the "Baldrige reforms" was that products and technology were controlled to Western destinations only because of the possibility that they might be diverted to the East. But anything going to Japan or to Western Europe was likely to be produced in those countries as well.

U.S. export controls, therefore, would only be as good as those of its Allies. Willingness to cut individual validated licenses for shipments to the West was linked to efforts to strengthen the national enforcement policies of other CoCom countries. Confidence that enforcement had been significantly strengthened led to an approximate 25 percent cut in the number of products being licensed to the West during 1987.

The Omnibus Trade Act of 1988 followed logically from the Baldrige reforms. The export control section of the Act removed the requirement for licensing of products to CoCom destinations below the level of technology that could be sold to the People's Republic of China without CoCom review. That additional cut in West-West licensing removed yet another 50 percent from the universe of products under control to allied destinations. Mainframe computers from Digital Equipment Corporation, IBM, Unisys and other major computer producers, semiconductor production equipment down to an accuracy of two microns, precision machine tools, and a number of products of reasonably high sophistication were available without an individual validated license.

That meant that, despite a doubling in the dollar value of U.S. exports between the first quarter of 1986 and the last quarter 1988, individual validated licenses showed a downward trend during that period, with 110,000 in 1986, 105,000 in 1987, 97,000 in 1988, and 85,000 in 1989. That number was below 20,000 in 1994.

The Baldrige reforms also established a new *de minimis* level. Previously the U.S. Government claimed jurisdiction over any product that contained any controlled U.S. part or component. In 1987 a *de minimis* level of 10 percent was established to Soviet, PRC, and East European destinations, and 25 percent to the rest of the world. The 1988 Omnibus Trade Act eliminated the distinction between Eastern and Western destinations, and established an across-the-board 25 percent *de minimis* level before U.S. jurisdiction could be asserted. This means that for the vast majority of products there was no need for U.S. re-export authorization. This provision was enacted, because in most cases (although these re-export authorizations were being requested from all companies) the only companies that complied were the generally law-abiding large European and U.S. multinationals.

The companies that the U.S. Government really wanted to keep track of simply ignored the re-export authorization requirement, since they believed themselves to be only under their host country's jurisdiction. Assertion of extraterritorial jurisdiction was not getting the U.S. Government very far, and it turned out to be a very effective way of de-Americanizing the components of a number of products overseas. One example was a large European multinational corporation. They which revealed that they were about to cut out $60 million worth of orders from one Boston-based company in 1986 because of the re-export authorization needed in order to use those products in their medical equipment. That cut would have eliminated about one-third of that U.S. company's sales for the year. This cut was contemplated only because of the European company's desire to get out from under the U.S. Government's assertion of extraterritorial re-export jurisdiction. Early in 1987, the Commerce Department withdrew the

assertion, changed the regulations, and subsequently the European company decided against that cancellation.

An additional example was a 1986 letter from a European aerospace company that said to its subcontractors that to the greatest degree possible they should use European-made. It instructed them to use U.S.-made parts only as a last resort. Once again, this was done to obviate the need for U.S. re-export authorization.

In February 1989, the Commerce Department published regulations eliminating unilateral export controls on selected technical data and chemicals. The requirement for U.S. authorization to re-export American products into CoCom countries was eliminated as well. This was part of the effort begun in the Baldrige reforms and continued in the 1988 Omnibus Trade Act to get rid of, to the degree possible, U.S. extra-territoriality. Clearly, it was counterproductive to U.S. commercial interests, and, moreover, it was not being followed by the target companies. Only a small portion of the intended targets ever submitted requests for re-export authorization (an average of 20 percent by Commerce Department estimates). Thus, in addition to undermining American business interests in the West, it was only minimally affecting the flow of technology to the East.

During this period there was also a dramatic reduction in the amount of time it took to process licenses. In 1984, the average processing time to Free World destinations was 60 days; to CoCom destinations that timeframe was 46 days. By 1988, those times were reduced to 14 days for the Free World and only four days to CoCom countries. Through a combination of management improvements and the installation of modern data processing systems, including

electronic mail and optical character readers, the burden on U.S. businesses and on foreign companies wishing to purchase U.S. products was significantly reduced.

CoCom and the End of the Cold War

CoCom, like NATO, was a creature of the Cold War and of the Soviet threat. With the opening of the Berlin Wall and the fall of the East European Communist regimes in autumn 1989, the level of threat perception, particularly in Western European but also the United States, dropped precipitously. As that threat perception receded, CoCom even more than NATO began to seem unnecessary and anachronistic. NATO, however, had institutional support from the military institutions and defense industries of its constituent countries. CoCom, by contrast, is merely a restraint on trade and had no institutional constituency whatsoever. There is not a single sector of the constituent countries that benefits from its existence. The amazing thing about CoCom is that it survived intact for so long, given the sacrifices that it imposed on its member country industries.

Thus, in an era when General Secretary Gorbachev emerged as one of the more popular figures in almost every CoCom country's national poll; in an era when the leader of the Soviet Union seemed to be pushing out dictators and promoting democratization in Eastern Europe; in an era when the chief spokesman for the Soviet Union, Gennady Gerasimov, declared that the "Brezhnev Doctrine" had been replaced by the "Sinatra Doctrine," so that each East European country could say, "I did it my way;" in such an era, CoCom was under enormous pressure for change. It was no longer a secret organization quietly run by a few bureaucrats in

Paris. It was being publicly debated, not only in the U.S. Congress but also in the parliaments of London, Paris, and Bonn. The new scrutiny meant that it had become politically controversial.

It was in this context that cracks began to appear in the CoCom facade. The United States Government resisted liberalizing proposals at the October 1989 CoCom Executive Committee meeting. The International Herald Tribune reported that the U.S. delegation was the lone holdout against the other 16 members of CoCom. Actually, the U.S. was not alone. The Japanese Government, with memories of the Toshiba incident fresh in their consciousness and with still unresolved territorial claims against the Soviet Union over the Northern Islands, had not been critical of the U.S. conservatism at the meeting. But Prime Minister Margaret Thatcher had already publicly disagreed with U.S. objections to the British company Simon Carves' proposal to build a machine tool controller plant in Armenia, earlier in 1989, telling the U.S. Government to stay out of the issue, since the British authorities had already decided that the project met CoCom standards. Later that year, on December 15, 1989, a resolution calling for West German withdrawal from CoCom participation in everything but the munitions list was introduced in the Bundestag by the opposition Social Democrats. It was defeated on a straight party vote, but Chancellor Helmut Kohl and Foreign Minister Hans Detrich Genscher had themselves been calling for a radical reduction in the CoCom list and were aware that they could not resist the pressure for radical reform much longer. Clearly, the political climate that had tolerated a conservative, no-change approach in CoCom had disappeared along with the Berlin Wall. The lure of lucrative projects in the East, including the Soviet Union, which had been a traditional market for Germany, was simply too hard to resist.

As Joachim Jahnke, FRG CoCom representative was later to explain,

> The Federal Republic of Germany stated clearly before our Parliament, "We stick to CoCom -- we will not pull out!" The F.R.G., as one of seventeen nations that shape CoCom decisions, has never acted on its own in dealing with the strategic export controls. But CoCom should not ask the impossible. CoCom will become obsolete if -- but only if -- it fails to adapt to the new circumstances. So the challenge to CoCom is a double one: we must assess the strategic situation and the practical realities of controls in a more and more integrating world. Continued cohesion on the Western alliance requires that CoCom adapts sufficiently -- and sufficiently fast -- to stay viable.[1]

The major factor that diminished the pressure on CoCom during the last half of 1989 and the first half of 1990 was the economic confusion and lack of direction in the Soviet Union itself. The Soviets did not have a great deal of hard currency to spend. Their general approach was to propose joint ventures, with the pay-back for the project being the sale of the product of the JV in the West. This made economic sense with energy and chemicals, which are readily marketable, but it is much less appealing with any kind of consumer good, or light industrial product, which is likely to be of questionable quality and unavailable for sale in less than five years.

Functioning U.S. joint ventures in the Soviet Union amounted to a mere few dozen, and -- due to CoCom restraints -- none were in what could be called the "high technology" sector. The FRG was the most active, with more than 100 JVs. But the results were disappointing -- the major role of the FRG was encouragement and support for Gorbachev and *perestroika*.

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[1]Speech to American Foreign Service Association at Symposium on Export Controls, U.S. Department of State (Washington, D.C., March 27, 1990), p. 2.

Nonetheless, the Soviet Union, with its 280 million people and its vast resources, posed a very attractive market for Western industrialized countries. The fact that it was so technologically backward was, in part, a tribute to the success of U.S. policy and CoCom unity over the past 40 years. A sharp break with the past, however, seemed to be in the making. The odds seemed to favor Gorbachev staying in power and his reform policies continuing to prevail. It was clear, therefore, that United States policy in CoCom would have to undergo a radical revision, supporting the pruning of the control list down to the key strategic products and technologies if it did not want to find itself alone in its willingness to continue restraining trade with the Soviet Union.

CoCom Watershed

Finally, with the pressure from the Allies building to a boiling point, on January 27, 1990, President Bush announced his commitment to a radical reduction in the CoCom embargo list. He designated the three highest volume categories of controlled items for significant reduction. He pledged list reductions in computers, machine tools, and telecommunications, which comprised more than 75 percent of licensing volume, to be decided and announced in June, at a special High Level CoCom meeting. On May 2, President Bush followed up with a proposal that 30 of the 120 categories of items on the list be eliminated entirely. Moreover, he suggested thirteen more categories that could be significantly reduced in scope. While these 43 categories did not comprise much in the way of licensing volume, the symbolic importance of the proposal indicated an entirely changed approach to CoCom.

Forty years of glacial change had given way to an avalanche of reform. Despite great skepticism based on the dismal reform record of CoCom and despite the five month time deadline under which they were operating, the June 6 and 7 High Level meeting saw enormous changes wrought in the control list in the three designated categories.

Computers jumped almost a decade in the level of technology made available worldwide without a license. Only a year earlier, anything faster than an IBM-PC Junior-level computer, with a PDR (processing data rate) of 6.5 Mbps (million bits per second), needed a license. The embargo level in May 1989 (or as it is known, the "general exception" level) was a PDR of 78 Mbps. Commerce Secretary Robert Mosbacher's decision to decontrol the IBM-AT 80286 microprocessor-based microcomputer (and its clones) had been bitterly opposed by Defense Secretary Richard Cheney when it was announced in June 1989. That decision decontrolled microcomputers up to a PDR of 69 Mbps, but even slower mini-computers and many mainframes were still difficult to obtain a license for if their destination was in the East. After the June 1989 microcomputer liberalization, the embargo level was still a PDR of 125 Mbps, which left out the majority of the 80386 microprocessor-based microcomputers. Licenses for 80386 microprocessor-based microcomputers were regularly being turned down by the Defense Department, even for destinations in Hungary, Poland, and Czechoslovakia.

That is why the June 1990 changes in the embargo list came as such a surprise to the business community. Overnight, the decontrol level for computers jumped to a PDR of 275 Mbps, which encompassed all of the 80386 microprocessor-driven microcomputers, many of the minicomputers of the Digital Equipment Company's VAX line, and a number of the slower mainframes of IBM, Unisys, and Control Data as well. "National discretion" licensing (with no

CoCom review necessary) was made available for computers up to a PDR of 400 Mbps. Beyond that to a PDR of 550 Mbps, "national discretion" licensing required 30-day prior notification to CoCom. Even more surprising, "favorable consideration" (meaning a presumption of approval after a four-week waiting period at CoCom) was established to all destinations up to a PDR of 1000 Mbps, a speed that only two years earlier had been the "distribution license" limit (the bulk license granted to established licensing customers giving them the right to send multiple shipments of pre-approved products to established and reliable end-users). Finally, a "favorable consideration" PDR level of 2000 Mbps was established for Eastern European countries whose governments agree to establish security procedures to keep computers from being diverted to unauthorized use. This final level had only been the distribution license limit to the most reliable end-users for the previous two years. A number of other parameters relating to memory, networking, and graphic work stations were changed as well. Clearly, the new controls would facilitate computer sales for banking, reservations, scientific research, and general data processing at a speed and sophistication that brought Eastern Europe -- and to some extent the Soviet Union -- to a level comparable to their Western counterparts for civilian projects.

Similarly, machine tool parameters, which had not seen any significant alteration for sixteen years, were brought up to a level necessary to carry out sophisticated manufacturing procedures. Lathes, machining centers, punching and shearing, and grinding machines were made available at tolerances that facilitated modern civilian manufacture. This had been an industry in the U.S. that had suffered significant loss of market share under severe enforcement of the CoCom limits in the 1980s. While the allied licensing agencies in European countries and Japan had taken a liberal interpretation of the control parameters for machine tools, the U.S.

government -- particularly the Defense Department, which had jurisdiction over sales to the East -- enforced a draconian interpretation of those same rules. By 1989, FRG machine tool sales to the Soviet Union were over $550 million, Japan $200 million, but U.S. sales a mere $1.5 million -- this in a market which had accounted for hundreds of millions in sales to the Soviet Union in the 1970s and where the U.S. machine tool reputation for quality was still good. The new machine tool list made no distinction between Eastern European and Soviet destinations.

Liberalization in the third category, telecommunications, was less far-reaching and more differentiated. Unlike computers and machine tools, which were straightforward technology transfer issues, telecommunications contained an intelligence dimension as well. Throughout the 1970s and '80s, there was virtually no change in the telecommunications embargo parameters at CoCom (except for the People's Republic of China, which had a special "green line" created after 1985). Consequently, while the telecommunications technology of fiber optics, high-speed digital switches, facsimile machines, and cellular telephones were fueling the information revolution of the 1980s, Eastern Europe and the Soviet Union were almost untouched by the impact of the new technology.

This meant that not only were the simplest commercial transactions such as reservations, banking, and general data processing impossible to conduct, even simple communications back to the home office could not be accomplished by Western companies doing business there. For example, Dresser Industries executives told of having to drive 150 kilometers into Warsaw to get an international line back to Dallas. Obviously, this caused a significant increase in the cost of doing business there and amounted to a virtual barrier to new investment.

Moreover, it was argued -- particularly by the European CoCom members -- that democratic institutions require access to the tools of information gathering and dissemination. Without them, a free press, a responsive government, and an informed electorate are impossible.

The House of Representatives responded to this argument by decontrolling all telecommunications equipment in the Export Administration re-authorization bill passed on June 6, the opening day of the CoCom high level meeting. But the Bush Administration, having offered far-reaching changes in computers and machine tools, was not prepared to go nearly as far in the telecommunications arena. What worried the Bush Administration was not the risk of reverse engineering turning civilian telecommunications equipment into the model for military hardware; rather, it was the near-impenetrability of modern fiber optic communications to external monitoring that gave reason for concern.

The Soviet national telecommunications network was very heavily dependent on satellite and microwave transmission equipment. Such communication though the airwaves was subject to interception by non-Soviet antennae. The U.S. National Security Agency argued that particularly in the age of *glastnost* and *perestroika*, when Western military budgets were diminishing in response to the reduced threat, reliable intelligence about Soviet intentions was more important than ever.

A very distinct policy of differentiation in telecommunications was agreed to at the High Level meeting at the insistence of the British and American governments. Fiber optics were made available only to Hungary, Poland, and Czechoslovakia. This was done under strict licensing guidelines that required as a precondition that an export control system would be put in place to protect against diversion. Once that system was in place, other preferential technology

transfer benefits would accrue (such as the previously mentioned higher speed computers). Other liberalizations in areas such as high-speed digital switching and advanced microwave and cellular telephone transmission were also conferred on Hungary, Poland, and Czechoslovakia. The German Democratic Republic was given a special preferred status, with few restrictions in anticipation of its unification with the FRG. There were some liberalizations in satellite ground stations, small digital PABX switches, packet switches, analog cellular phone systems, and the manufacture of digital (voice) switches of slower speeds (a French project that had been blocked by the United States for more than five years). But the consensus of the telecommunications industry was that while few impediments remained to trade with East Europe (particularly Poland, Hungary, and Czechoslovakia), it would still be difficult to sell the Soviet Union the sort of equipment it desired to upgrade its telecommunications system.

Clearly, the decision had been made to allow a high degree of technology transfer in the area of already-manufactured products. This was apparently based on the assumption that particularly in micro-electronics, if scientists and technicians have not progressed in their own knowledge through all the preliminary steps of innovation, it is extremely difficult, if not impossible, to jump to the highest step in development.

An IBM engineer at a super-computer facility once remarked to me that he was more worried about his new central processing unit falling into the hands of his rival at Fujitsu in Japan than he was about the Soviets getting hold of it. Since the Soviets were no where near IBM's level of research and development, he did not believe they would know what to do with it, and the loss would be limited to the immediate problem of the specific unit.

Reverse-engineering the device would be impossible for the Soviets with their huge gaps in fundamental steps that led to the latest development in central processing units for computers.

Intelligence estimates at the end of the 1980s put the Soviets a decade behind in computers and semiconductor production. They were still having trouble getting good production run yields out of their 64 kilobit DRAM, a standard memory chip in the West for the previous ten years, while the U.S. and Japan were developing the 16 megabit DRAM and getting very high product run yields out of the one Megabit DRAM. While IBM and Cray super-computers could run for 10,000 hours between maintenance, Soviet scientists considered 100 hours of trouble-free performance out of a mainframe an accomplishment. Moreover, while the Soviets were able to produce one-of-a-kind, "boutique" computers for their space program, they were simply incapable of mass production in this area. In 1990, there were approximately 40 million computers in the United States, or one for every seven people. In the Soviet Union the number was just 300,000, or one for every 900 people -- this in a planned economy, which, if anything, needed computers more than a free market economy. Similar gaps existed in most other basic areas of modern technology, particularly machine tools and telecommunications.

The only exception to this rule with regard to making available high-tech finished products was in the category of telecommunications, where the concern was more intelligence than it was technology transfer. Obviously, the Soviets would not be able to reverse-engineer fiber optic cable or multiplexers simply by examining them. But, it was believed that those same cables and multiplexers in the possession of the Soviets would significantly complicate the job of U.S. intelligence agencies. Hence, virtually no change was made in the availability of fiber optic telecommunications equipment to the Soviet Union.

The "core list" process, which was completed in spring 1991, made the CoCom embargo list brief enough to be manageable for the first time its 41-year history.

The Shift from East-West to North-South Issues

As the list of embargoed products to the East diminished and the remaining intra-CoCom disputes began to revolve around esoteric subjects, such as re-export controls, CoCom attention was drawn increasingly to issues with which CoCom was not designed to deal, the so-called North-South issues: preventing the proliferation of the capability to manufacture nuclear and chemical weapons and the means to deliver such weapons with ballistic missiles. There was general agreement in CoCom (and, indeed, the world community as evidenced by the Nuclear Non-Proliferation Treaty) on the need to prevent the spread of nuclear weapons technology. Indeed, there is a specific CoCom embargo list to deal with this problem, the Atomic Energy List, the original focus of which was the Soviet Union and other proscribed communist destinations. It was originally conceived in the 1950s as a strategic list to prevent the sale of such technology to the East. Thus, it was the counterpart to the CoCom "Munitions List" and the dual-use "International List." But by the 1960s, the Soviets possessed most of the technology on that list, and it became more of a guide to its member countries as to what not to sell to developing countries. It evolved, thereby, into a North-South control within CoCom without any formal acknowledgement, and took its place alongside the Zangger List, the London Suppliers List, and the guidelines of the International Atomic Energy Agency as non-proliferation guides for sales worldwide, not just to the East.

By the early 1980s, however, it became clear that new threats were challenging the United States and its CoCom allies. Intelligence agencies reported that Libya, Iraq, Brazil, Argentina, and a growing number of other developing countries were developing ballistic missile capabilities. To counter this threat, the Reagan Administration began an intense effort to bind the major industrial powers in the West to a new regime aimed at stopping the proliferation of ballistic weapons capability. This effort culminated in the signing of an agreement in April 1987 among the U.S., France, Great Britain, the Federal Republic of Germany, Italy, Canada, and Japan, known as the Missile Technology Control Regime (MTCR). That regime was separate and apart from CoCom, because the French Government, among others, objected to any new set of controls that would change the focus of CoCom from a strategic East-West organization into a political North-South organization. Nonetheless, the MTCR contains all the major CoCom members and serves the function of preventing missile technology-related sales to the non-CoCom countries. It is enforced by means of special foreign policy controls enacted into MTCR regulations in the seven signatory countries. Although they are not CoCom controls, they are enforced by the very same export control authorities and were published as addenda to the CoCom regulations themselves.

A similar effort was undertaken to control chemical and biological weapons technology in 1984, after the first use of chemical weapons during the Iran-Iraq war. This time it was the Australians (with the strong support of the U.S. Government) who took the lead. At first the group was rather informal and *ad hoc*, meeting in the Australian Embassy in Brussels to exchange information about specific chemical shipments that might be used as precursors to chemical weapons in countries attempting to develop such capabilities. But it soon became clear

that the spread of such weapons could only be prevented by a more organized effort among the industrialized countries of the world. The discovery, early in 1989, of the construction of a chemical weapons facility in Rabta, Libya, built by the Imhausen Company of the FRG, caused great embarrassment to the West German Government. It spurred the convening in Canberra, Australia in September 1989 of a major conference on preventing chemical weapons proliferation, under the auspices of the Australia Group, bringing together both the major chemical companies and their host governments

Even before that conference, during 1988 and 1989, the major chemical producing countries had agreed to monitor chemicals that could be used as chemical weapons precursors and to block the shipments of such chemicals to countries suspected of diverting them into chemical weapons. In February 1989, under the foreign policy authority of the Export Administration Act, the United States Government had published a list of more than 50 chemicals would require a license since they could be chemical weapons precursors. Other governments followed suit during that year, particularly after the Canberra Conference.

Once again, this effort took place outside of CoCom. French objections to using CoCom technology controls as a means of enforcing the foreign policy of the Western industrialized countries upon the less developed world had the tacit support of other European CoCom members. While all agreed that the goal of preventing chemical weapons proliferation was worthwhile, indeed absolutely necessary, there was resistance to utilizing CoCom for this purpose.

CoCom was a victim of its own success. Over its 45-year history, it accomplished its major objective of denying militarily useful Western technology to the Soviet Union and its

allies. Indeed, in the process it has significantly contributed to the undermining of the economic base of the East Bloc. Although there were notable failures, such as the Toshiba-Konigsberg sales of machine tools to the Soviet Navy, the Soviet Union was not able to compensate for its own technological shortcomings and inherent economic defects by stealing or diverting technology from the West. Thus, despite a high cost to U.S. industry and competitiveness, and despite great friction and grumbling by U.S. allies, CoCom -- and by extension U.S. technology transfer policy -- achieved its objective.

Those who said that the task assigned to CoCom was too large and far-reaching were proven wrong. Those who said that technology was too diffused to control were proven wrong. With very few exceptions, the technology-producing countries of the world, both within and outside of CoCom, cooperated with the United States in keeping dual-use technology out of Soviet hands.

In the face of formidable challenges, CoCom adapted itself to the new East-West strategic environment. Nonetheless, it was argued that CoCom increasingly became irrelevant to the major security threats of the 1990s. In a report issued in March 1990, the European Round Table (comparable in membership to the American Business Round Table, with the Chief Executive Officers of the larger corporations comprising its executive council) argued:

> CoCom lists will . . . only continue to make sense in our changing world if they become realistic again, i.e., applicable internationally without the notion of any specific potential adversary.[2]

[2]European Round Table of Industrialists, European Industry and CoCom (Brussels, March 1990), p. 12.

As Saddam Hussein demonstrated during the Gulf War with his threat to use chemical weapons and possibly nuclear weapons whenever they became available to him, threats to Western security no longer followed the pattern of the Cold War. The origin of threats are likely to be regional, but that does not make them any less dangerous. They can, of course, be made less deadly if nuclear, chemical, and missile technology transfer controls on exports to the Third World succeed. That is what the European Business Round Table was alluding to in its admonition to make CoCom lists "applicable internationally without the notion of any specific potential adversary."

The Future of Export Controls

As we look towards the future of export controls, we see a picture that is at one and the same time simpler and more complicated for the business community. It is likely to be simpler because a smaller number of products will be controlled. It is likely to be more complicated, because, despite the reduced numbers, there will be an increased number of control lists to check for embargoes or licenses, and there will be less obvious logic to the reasons for control, with high technology computers readily available for shipment to the East, while other comparatively low technology products will be caught under one or another of the foreign policy control regimes.

The average shelf life of a computer is now under 18 months. Indeed, more than 70 percent of 1992 revenues for the U.S. computer industry came from products that did not exist two years earlier. This figure is expected to exceed 80 percent in 1995. What these statistics

mean is that the computer industry must get its products to market quickly or risk missing an entire product cycle, a potentially debilitating development.

The most important element in President Clinton's export control reforms put forward in the Trade Promotion Coordinating Committee report of September 30, 1993 is that rather than reacting to the market as it was, it anticipated the large-scale introduction of the new Reduced Instruction Set Computing ("RISC") technology.

Historically, the power of personal computers and workstations as measured by Composite Theoretical Performance ("CTP") was based on the power of the microprocessor resident on the computer's "motherboard," the computer's main electronic circuit card. The microprocessor's CTP performance was the computer's CTP performance.

At the time of the last export control level update -- the 1991 "Core List" exercise in CoCom -- the most powerful microprocessor then in mass production and available in quantity through numerous retail outlets and other marketing channels worldwide was the Intel 80386 chip. Its CTP was rated at 12.4, so decontrol limits were set at 12.5. By early 1993, Intel, as an example, had introduced the 80486 chip with a CTP of 22. And in 1993, most American semiconductor and computer exporters began to introduce RISC-based microprocessors at CTPs of 66 and above. Here is a chart that will highlight the chronology:

Table 1

• January 1993	Intel 80486	22 CTP
• September 1993	Intel Pentium	66 CTP
• September 1993	Power PC 601	107 CTP
• December 1993	DEC Alpha	194 CTP
• Within the next two years, individual chips with CTPs of 350 or more will be on the market		

The Logic Behind the Latest U.S. Proposal to CoCom

The September 30, 1993 TPCC export-control-level decisions address the fact that the IBM PowerPC 601 and Pentium-based machines would be available by the millions around the world in 1995. These are desk-top machines of enormous power and small size. Indeed, almost all would fit in an automobile trunk. Given their small size and their ubiquity, trying to control machines at previous control parameter levels made no sense. The President's announcement and the anticipated CoCom decisions to raise the decontrol level for computers are the first time that the computer industry has seen a decision by those making export control policy to anticipate where computer technology is going and what is controllable. This was a major shift in the U.S. Government's approach to the issue and a welcome one.

These announcements make sense for another reason -- semiconductors are not controlled at all except to proscribed countries. American chip manufacturers have developed numerous vendor relationships with customers around the world in many countries, including many that are outside the former CoCom. This is the principal vehicle by which "clone" computers appear on the worldwide market so soon after American computers incorporating the same chips first appear. To attempt to control computers using these chips, while allowing non-controlled computers using the same chips to be developed and marketed abroad, only harms American exports -- at the critical time of initial market availability when computer sales are essential to winning market share, follow-on orders for peripheral equipment, customer loyalty, and revenue to drive needed investment in research and development.

To link export control levels to this pace of semiconductor and computer change makes sense, but the old assumptions on how to establish such levels (*i.e.*, equating computer and microprocessor performance) are already being rendered obsolete.

New Computer Architectures

The dynamics of the worldwide general purpose computing market are driving changes in computer architectures, especially in the personal computer, workstation, and networked computer marketplaces. A major reason for these architectural changes is that customers wanted a cost-effective way to replace obsolete technology with newer technology in order to upgrade their systems. In the past, upgrading a PC or workstation meant having to replace it with an entirely new one -- an expensive idea, especially in an era where product innovation cycles occur in six-to-eighteen-month cycles.

Therefore, the new PCs and workstations now appearing in the marketplace permit less costly upgrades by replacing old microprocessors or motherboards with new chips or boards containing newer microprocessors. Instead of spending several thousands of dollars to keep pace with technology, a customer need spend only a fraction of that. In addition, the new machines include expansion slots for adding more than one microprocessor, thereby enabling the customer to expand his or her computing power simply by adding more chips. Once this happens, the old assumption that the CTP of the computer equals the CTP of a single microprocessor becomes outdated. A customer simply buys additional chips, either directly from a vendor or through some other electronics outlet, and thereby gets more power from the machine. It is as simple as snapping in a new board, and the new boards are small enough to fit in a briefcase.

Today's personal computers and workstations typically provide for four expansion slots. Silicon Graphics machines already provide for up to sixteen. Other companies plan multiples of this number in their next generation.

Parallel Computing

As early as the mid-1970s, computer scientists recognized that the laws of physics were becoming a barrier to future progress in semiconductor technology. It was well understood that in order to make semiconductors (especially microprocessors) more powerful, the size of the circuitry on a given chip must become smaller. Longer circuits mean that it takes more time for electronic signals which operate at the speed of light to get from Point A to Point B, thereby slowing computer performance. These scientists understood that as we started to manufacture sub-micron (visible only through powerful electron microscopes) circuit-based semiconductors, we would also begin to press the limits of physics governing the speed of light.

Sub-micron circuitry means that chips perform their operations in nanoseconds and even faster speeds. A nanosecond is the time in which light travels about two feet. You can get even faster speeds from even smaller circuitry, but at some point in time, you begin to approach the limits of physics. You cannot go faster than light.

This the problem that computer scientists faced. They concluded that if you cannot change physics laws, then you must change the nature of problems that computers work on. Their solution: Break the problem you're working on into smaller units, have several computers work on the component elements of the problem at the same time, piece the results that these

computers arrive at back together and thereby arrive at the conclusion to the overall problem. This is the approach used in "parallel computing."

At first, parallel computing was only performed by large mainframes like Cray systems and vectored IBM systems. But as technology has continued to improve, scientists and engineers (particularly software engineers) have learned how to make smaller computers, such as personal computers and workstations, work together in parallel. Today, many companies offer parallel systems. For example, IBM computers operate in "moderately parallel" configurations, meaning they can use up to 64 RS6000 workstations to work on a given problem. Using the CTP formula currently in effect, the CTP of a 64-way IBM RS6000 system today is 434.79.

In 1994, IBM announced for general availability a new version of their parallel product line, with a multiple configuration of workstations working in parallel. In 1995, we should see the advent of so-called "massively parallel" systems available. Remember, with the Japanese agreement regarding control parameters, the supercomputer definition is set at a CTP of 1500. Meanwhile, we can anticipate "massively parallel" workstations operating at CTPs in the tens of thousands available within the next two years, approaching the level of 100,000 CTP by this year and one million CTP by the turn of the century. Given this new technological environment, the Administration supercomputer threshold of 2,000 seems rather modest. Also, this new technology raises the question of whether it makes sense to have a special supercomputer definition at all. How does one define a supercomputer in the age of parallel processing?

As I have been pointing out, the new microprocessors, along with the new computer architectures, plus the availability of networking, have resulted in an exponential growth

of computing power for 1995 and beyond. Adding still further to this explosion of computing power is the wide availability of software for "virtual parallel processing."

Computer networks are prevalent around the world, and software engineers have been working on ways to get even more power out of existing computer networks. In one area of computer networking development -- which has, until now, been overlooked in the export control regulations -- the use of these networks has now made it possible to use many workstations and personal computers in parallel configurations. This is so-called "virtual parallel processing."

"Virtual" computers are those in which a number of networked computers are configured through the use of software to act as a single computer. Under today's virtual parallel software, any Unix-based computer can be used in a parallel configuration.

In the United States, a commonly used virtual system is "Parallel Virtual Machine," or "PVM." PVM permits many Unix-based systems such as IBM's RS6000 machines to operate as a single system. PVM, which was developed at Oak Ridge National Laboratory, is available to users at no cost and without export control via Internet, and thousands of copies are currently in use around the world. For example, many American universities (such as Cornell, Syracuse, Stanford, Yale, and Washington University) use virtual systems for quantum physics, molecular mechanics, shallow-water dynamics, and fluid dynamics applications, among others.

It should also be noted that PVM is not the only such virtual software available around the world. It is simply the most widely used in the United States. Other such software includes Linda, Parmacs, Express, and PCN, with Parmacs being very widely used in Europe.

These virtual systems are already in widespread use globally. No export controls can stop their transfer across borders. The university community uses them widely, and since there is no former CoCom country which controls the indigenous transfer of university learning within its own borders, people all over the world are already well aware of these systems and can easily access the software through Internet and other international networks.

Economic Impact: Incentive to Move Assembly Offshore

American computer companies wish to maintain jobs and manufacturing in the United States. In this context, it is prudent to consider the impact that new computer architectures and customer options will have on American exports.

The underlying licensing assumption of the current policy regarding supercomputer and other computer controls is that computer systems will be shipped as a single unit or system. However, several points should be considered about the new computer architectures:

- Microprocessors are not controlled, except to targeted countries.
- Multi-chip architectures mean that customers abroad can upgrade computers that have been shipped under general or distribution license simply by adding new chips or expansion boards, thereby boosting the computer's performance to levels that would, if shipped as a complete system, require a supercomputer export license. In such a case, it would clearly be possible for a customer wishing to circumvent U.S. supercomputer requirements for special security regimes as a condition of the license to purchase items on a component-by-component basis abroad.

Under such circumstances, the impact on U.S. assembly operations could be significant, since there would be an incentive to buy clones and separate chips and boards and a disincentive to buy a complete system from an American manufacturer or vendor.

- A similar situation exists in parallel systems architectures. Assume that a parallel system is shipped without individual license from the United States, because it falls within the distribution license or the supercomputer control parameters. The system already has the high speed switch and software that makes invoking parallel operations possible. If a customer wishes to upgrade that system, then he or she need only acquire additional workstations (also available under general or distribution license) to upgrade the system to "supercomputer" level without having had to receive a U.S. export license. Again, an incentive is thereby created to move U.S. assembly offshore at the cost of American jobs.

Clearly, the Congress should consider the potential impact that special supercomputers licensing conditions could have on American employment, especially since there are so many valid substitutable approaches available to customers that render the control system ineffective. **The time has come to terminate these special supercomputer licensing provisions to the members of the successor regime to CoCom.**

Unilateral Controls

Unilateral controls should be strongly discouraged. A strong bias should be created towards reliance on multilateral controls. For example, in another industry with which I am familiar, the U.S. machine tool industry is still suffering the effects, in terms of lost market share and lost reputation, of the foreign policy controls imposed on the Kama River truck plant in 1979. Because of those controls, the U.S. machine tool builders lost a market in which they were the dominant supplier during the 1970s. But, in addition, because they were forbidden to service their machines or even to supply spare parts, they developed a reputation within the entire Soviet market as an unreliable supplier. That meant that U.S. companies were not asked to bid on projects in which all of our other CoCom allies participated. Markets worth billions of dollars were effectively abdicated during the late 1970s and 1980s. Not only that, the reputation for unreliability has continued into the successor Russian market, with prospective buyers still wary of potential U.S. foreign policy controls undermining the delivery of goods and services. Russian factor managers beyond the Kama River plant remember the dislocations caused by the U.S. controls during the 1980s and hesitate to risk a rerun in the 1990s.

The same problem exists with regard to the People's Republic of China, only in the case of the PRC there is an ambitious modernization program under way and, in marked contrast to Russia, the Chinese have large reserves of hard currency to spend in purchasing machine tools. United States companies that manufacture machine tools have seen their exports to the People's Republic of China grow from a paltry $1.5 million in 1981 to $154 million in 1993 and an estimated $200 million last year. While they still trail Japan and Germany in market share, China has become their largest overseas market. Interestingly, with their ambitious

industrialization plans, the Chinese have repeatedly stated their preference for American machine tools, which have an excellent reputation in the PRC. The Chinese have noted, however, that their failure to buy more U.S. machine tools is directly related to "licensing difficulties" which they have encountered with the U.S. Government that they have not encountered with the Europeans or the Japanese.

A cable which Cincinnati Milicron, the largest machine tool maker in the United States, received from the Chengdu Aircraft Industrial Corporation on February 1, 1994 is illustrative of this problem. The Chengdu Aircraft technical department manager noted that in view of the improved relations between China and the governments of France, Germany, and Italy, and because of the dissolution of CoCom, many European machine tool companies were rushing into the China market. Those companies claimed that they had the full support of their governments and that they could obtain export licenses with ease. The Chengdu department manager then went on to note, "Though we have interests in your company products as well as other American products, but because of the difficulty in getting export licenses, we did not invite any American machine tool manufacturers for technical discussions. ... We sincerely hope that the U.S. government officials who are in charge of exports to be more flexible and smarter not to kill the U.S. manufacturers' opportunity in marketing their products in the fast growing China market and to let the European suppliers dominate this market. Our company is planning to send a delegation of six people to visit Germany, France, Italy, and Switzerland to determine machine tool models and possibly conclude orders. We are not planning to visit manufacturers in the U.S. because of difficulty in obtaining export licenses."

Machine tools continue to be among the most tightly controlled products on the United States control list. Indeed, they remain one of the last issues to be resolved in the list-making exercise for the new post-CoCom regime. It is critical that this issue be resolved in the near future, because, as the incident I have just recounted reveals, there is already a widespread perception in potential markets, particularly China, that the United States Government is more stringent than its former CoCom allies. It is, therefore, very much in our interest to create a clear set of parameters that would govern trade among all advanced Western countries. Unilateralism and the residual perception of unilateralism is extremely damaging to U.S. trading and security interests.

Moreover, in machine tools -- as is the case in virtually all other sectors of American history -- the United States no longer dominates the world marketplace. Unilateral controls, therefore, are frequently ineffective in denying the intended target the product or technology that is controlled. Our leverage to affect the other nation's policies through unilateral denial is all but gone. Unilateral controls frequently serve to further disadvantage U.S. companies without materially affecting the availability of the product or technology to the target country. In the process, the immediate market and the long-term reputation for U.S. companies are destroyed.

There are, of course, extreme cases where there is no alternative available to policymakers in order to distance our nation from particularly repugnant conduct, or isolate terrorist regimes. But the new Act ought to be written in such a way as to compel immediate negotiations in order to attain multilateral cooperation within six months and then to compel twice

yearly review of unilateral controls with tough standards to weigh the controls against the cost to American companies in terms of lost markets, lost jobs, and damaged reputations.

Indexation

Furthermore, it is critical that products and technologies placed on the Commerce Department's Commodity Control List ("CCL") be indexed for performance in a manner that takes account of the succeeding 12 months after review, so that items are removed from the CCL as their technology becomes less critical to proliferation efforts. The machine tool and the semiconductor production equipment industry had bitter experience with lack of updating. It was 17 years between the 1991 development of the CoCom Core List and 1974 when the CoCom machine tool and semiconductor production equipment control lists had been last revised.

What occurred during that long span of time was a deliberate decision on the part of the U.S. Government to freeze the parameters on performance of these industries as a part of an overall policy of economic warfare against the Soviet Union. Other products, such as telecommunications equipment, were similarly frozen at mid-1970s performance parameters, but it was never acknowledged to U.S. industry that this was an intentional U.S. policy. Thus, year after year went by, with a great deal of effort and, indeed, man-years of top engineers providing expertise for the Technical Advisory Committees at the Commerce Department and detailed and well-argued proposals from U.S. industry to other parts of the U.S. Government -- all to no avail for a decade and one-half.

Arbitrary and opaque behavior on the part of the U.S. Government should not be allowed to continue under the new Act. In order to compel regular, periodic review of the

control list, at a minimum, the indexation provision contained in H.R. 361. Mr. Chairman, ought to be included in any new Export Administration Act. My preference would be for a more forward-looking provision, basing indexation on performance parameters expected over the succeeding 12 months after the review. President Clinton has already indicated his support for this approach in his Trade Promotion Coordinating Committee Report of September 30, 1993.

Inter-Agency Process

One of the critical questions which the Committee will be considering as it writes the new Act is that of the responsibilities which the various agencies will have within the licensing process. I believe that the time has come for Congress to re-examine the entire inter-agency review process. Policies and circumstances which may have required certain review processes in the 1970s and 1980s may no longer be appropriate as Congress establishes an export control system for the 1990s and beyond. Last year, the National Association of Manufacturers ("NAM") presented an export control chart that detailed all the agencies that review licenses under various circumstances. It is based on extensive research done by NAM, and it is popularly known as the "chart from hell." Is it really necessary to build so much redundancy into the system? How many agencies have to review the same license before the U.S. Government comes to a conclusion with regard to whether a license ought to be granted? These are the questions the Committee ought to consider as it writes the new legislation. Is it still necessary for the Commerce and Defense Departments to replicate studies of the technological performance of a particular export item, or the reliability of a particular end-user, which is done, in any event, by utilizing reports from the intelligence agencies, or by sending State and Commerce Department

employees out into the field to check out prospective applicants? In the past, this has led to inter-agency warfare and public disagreements aired in the media even before they are given inter-agency review.

I think that we can do better and that we certainly need to do better as international competition becomes even more fierce in the last half of the 1990s. Obviously, the State, Defense, and Energy Departments have vital roles to play in drawing up the lists that will guide licensing decisions. Also, their advice and counsel should be relied upon when difficult technical or foreign policy issues arise within the licensing process. But I fail to see why these agencies need to be involved on a regular basis in day-to-day licensing decisions. The Commerce Department ought to be given the authority and the resources to conduct its own technological reviews of licenses in order to properly reflect the President's policies through the review of control lists and the issuance of export licenses.

We are never going to get away from the Kafkaesque horror stories about export licensing caused by the seemingly endless interagency reviews until we get rid of the system that is described in the "chart from hell." The final authority for granting licenses should be vested in one agency, the Commerce Department. When extraordinary circumstances force inter-agency review, firm deadlines need to be established and enforced, within which the Secretary of any dissenting agency would be obligated to authorize the escalation up to the next inter-agency level.

Dispute Resolution

During the 103rd Congress, the issue of dispute resolution proved to be the most difficult issue with which the Committee dealt. Ultimately, this was one of the issues that pushed

the House into gridlock over the re-authorization of the Export Administration Act. This need not be the case in the 104th Congress. It should be possible to devise an equitable system to resolve disputes between the Commerce Department Commodity Control List and the State Department's Munitions List. I am sure that a dispute resolution process with tight time limits can be established. It should be mandated that either department can bring issues into the process for resolution. Currently, most issues need the State Department's consent before they can even be brought into the dispute resolution process. I can tell you from personal experience that this is a system badly in need of revision. As it stands, the process is heavily biased towards the State Department, with an automatic presumption that any item claimed by the State Department for the Munitions List belongs on that list. I would argue that when an item has both a civilian and a military use, the presumption should be that control is maintained under the CCL.

Conclusion

In conclusion, Mr. Chairman, as I noted last year, Albert Einstein said at the dawn of the Atomic Age, "Everything has changed about the world, except the way that we look at it." The same could be said about export control policy.

We live in a period of almost blinding technological and political change. As the Committee considers its new legislation, certain key points need to be kept in mind. First, with technological diffusion and miniaturization as prevalent as they are, it is almost impossible to control technology or to keep it within prescribed parameters. Consequently, the mandate to the Executive ought to be that control lists should to be draw as narrowly as possible, always keeping in mind that the objective is to control the export of only those products and technologies

required for the proliferation of weapons of mass destruction. The objective is not and cannot be to control all sophisticated technologies Second, while it may be necessary to impose unilateral controls temporarily, a mandate for multilateralism ought to be at the core of any new legislation. Finally, simplification and accountability ought to be the guide to any new export administration licensing process. We cannot afford to operate under an Export Administration Act devised at the height of the Cold War and last revised when the Soviet leadership was still agonizing over whether to pull out of Afghanistan. Nor can our high technology industry afford to operate under a slow, inefficient, and confusing licensing process. Given both the new threat environment and the new international competition that we face, we simply must do better.

STATEMENT OF

HOWARD LEWIS III
VICE PRESIDENT FOR TRADE AND TECHNOLOGY POLICY
NATIONAL ASSOCIATION OF MANUFACTURERS

ON
IMPACT OF EXPORT CONTROLS ON U.S. INDUSTRY

BEFORE THE
SUBCOMMITTEE ON INTERNATIONAL ECONOMIC POLICY & TRADE
OF THE
INTERNATIONAL RELATIONS COMMITTEE
U.S. HOUSE OF REPRESENTATIVES

JANUARY 25, 1995

Mr. Chairman, members of the Subcommittee, my name is Howard Lewis. I am the Vice President for Trade and Technology Policy at the National Association of Manufacturers.

I have been invited today to talk about the impact of export controls on U.S. industry; or, to put it another way, to answer the following, basic question: why should we be worrying about export control policies in the first place?

I believe this is the right question to address at this time. One of my colleagues in the NAM keeps reminding me that Washington is a place where some of us have been giving the answers for so long that we have forgotten the question. He has a point. The failed attempts in both the 102nd and 103rd Congresses to rewrite the Export Administration Act (EAA) are clear signs that we have not really come to grips with the basic questions surrounding this issue.

On one hand, efforts to reform the control system have often been sidetracked by arcane debates that have caused all of us to lose sight of the proverbial forest for the trees. On the other hand, some of the debate over the EAA has wound up talking about the wrong forest altogether as illustrated by the fact that many people still believe the EAA deals with arms rather than commercial exports.

So, let me explain in as straight-forward a fashion as possible why this issue has been and still is important to U.S. industry involved in the export of commercial goods and technology.

The current export control system was essentially put into place in the late 1940s as a means of preventing the former Soviet Union from getting its hands on commercial goods and technology that would help its strategic and military forces.

In theory, this system was primarily aimed at restricting high technology products. In the 1950s and 1960s, these products usually came out of the U.S. defense and space programs rather than from our commercial sector. So, the impact on U.S. commercial interests was relatively limited.

Theory and practice, however, began to collide in the 1970s. The commercial sector rather than the government increasingly became the driver in technology development. Moreover, technology development began to outrun the ability of the control system to adjust. As a result, by the mid-1980s, 50 percent of U.S. manufactured exports needed some form of prior approval from the U.S. Government simply to get out of the country. This meant that the control system was catching up far more than just leading-edge technology.

The late 1970s and early 1980s also saw the U.S. Government impose a series of unilateral controls, principally against the former Soviet Union, which seriously harmed both U.S. agriculture and industry. Unilateral agricultural controls were lifted relatively quickly,

with protection against future controls on agricultural exports written into the 1985 EAA. U.S. industry was not afforded anywhere near this same level of consideration or protection — a subject I would like to return to in a moment.

The basic point I would like to stick with here is that by the mid-1980s the U.S. export control system had become a major export disincentive. The statistic I cited a minute ago — 50 percent of manufactured exports caught up in the system — comes from the 1987 report of the National Academy of Sciences (NAS), *Balancing the National Interests*. It is a fairly solid number.

The statistic from the NAS report which received a lot more attention was the estimate that the short-run direct costs of controls at the time might be $9 billion annually. This $9 billion was admittedly an estimate based on a certain set of assumptions. At the time, numerous questions were raised about the validity of this estimate.

In 1993, the Institute for International Economics (IIE) published a study, *Sizing Up U.S. Export Disincentives*, which indicated that the NAS figure was actually a fairly good "ballpark estimate." The IIE report found that the middle range of cost estimates for all U.S. export disincentives ran from $21 to $27 billion, with export controls ranked as the number one disincentive.

A few minutes ago, I mentioned unilateral foreign policy controls. These controls are the bane of many a U.S. exporter's existence. A good case example of why this is so can be found in the unilateral controls placed on petroleum equipment exports to the former Soviet Union in the early 1980s. The Commerce Department in 1987 estimated that the U.S. lost $2 billion in direct export sales over the lifetime of these controls.

The indirect impact was probably even more serious. Up until that time, U.S. companies dominated the world market in Arctic drilling largely because of expertise gained

in developing the Alaskan North Slope. Our unilateral controls allowed foreign competitors not only an opportunity to move in and take over a key market, but equally important, provided them with the chance to prove their equipment and convince customers all over the world that their products worked in these extreme conditions.

Once these unilateral controls were in place, it took an extraordinary effort, lasting nearly 5 years, to get them lifted, despite widespread evidence that they were doing significant harm to U.S. industry, costing American jobs, and serving no purpose whatsoever since the Soviets were getting the petroleum equipment they needed from sources in Western Europe and Japan.

Let me quickly cite some other cases where unilateral controls are having a significant adverse impact on major industries:

- In the late 1980s, a license application for a supercomputer export to India was delayed for so long that the Indians went out and developed their own machine. We lost an export sale and created a new competitor.
- Because of U.S. controls on a wide range of countries, Airbus in the late 1980s made the decision to go through the time-consuming and costly process of certifying all of their fleet for non-U.S. engines. This could lead to a loss of tens of billions in export sales and thousands of jobs in states such as Ohio and Connecticut.
- In the past year, the U.S. machine tool industry has received clear evidence that uncertainty over U.S. licensing is causing customers in China to turn to suppliers in Western Europe.

The issue of unilateral foreign policy controls was examined in a recent study, *Economic Security: the Dollar$ and Sense of U.S. Foreign Policy*, done by the Council on Competitiveness. Analyzing eight case studies, the report found that $6 billion in U.S. exports sales and 120,000 jobs were put at risk.

Whether or not you agree entirely with the numbers I have been citing for the past few minutes, you should not lose sight of the basic fact that this complex, regulatory system has caught up a lot of U.S. commercial exports resulting in the outright loss of export sales and damaging the credibility of U.S. firms as reliable suppliers. The harm done to U.S. industry has been serious.

Are American companies being as badly hurt today by this system as they have been in the past? Probably not. Significant changes have been implemented in the past two years that have reduced the burden of controls, especially for computers and telecommunications equipment. The fact that things are not as bad as they once were, however, does not mean that the issue has gone away. Let me explain why.

First, many industry sectors ranging from machine tools to analytical instruments to semiconductors have not seen as many benefits from recent changes in the controls system as did computers and telecommunications. Furthermore, for the computer industry, the benefits of these changes may be short-lived. This year, computer workstations will top the current supercomputer threshold and once again be controlled.

Second, companies continue to encounter regulatory problems ranging from license delays to product classification disputes. Equally important, corporate costs in complying with the regulations persist despite the recent decrease in license applications because new controls and screening requirements now affect an even broader group of exports, some of which have never before been subject to export controls.

It is important to remind ourselves that the export control system involves 1,500 pages of arcane regulations that are changed roughly 100 times a year. Even at the simplest level of licensing, there are over two dozen different types of general licenses.

Third, unilateral controls on specific countries and products continue to be imposed. These range from on-highway tractor trucks in Iran to scientific instruments in India to machine tools in China. In addition, the U.S. often applies its own unilateral interpretation of multilateral control agreements. Until recently, the lack of any *de minimis* rule in U.S. regulations for chemical mixtures is a case in point.

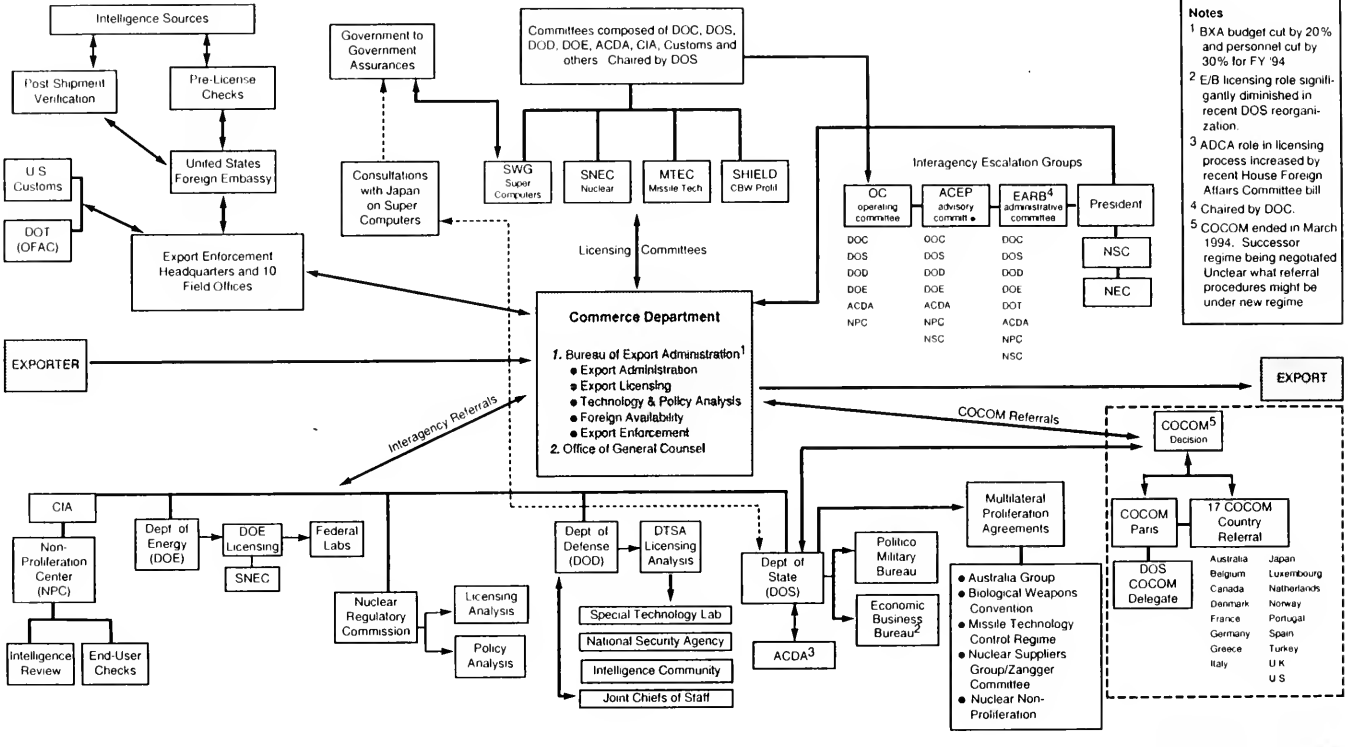
Fourth, the nature of the proliferation threat we face today is much more difficult to deal with through our control policies. Cold War controls focused on high-technology, involving a specific target and a limited number of suppliers. Counter-proliferation controls often involve the exact opposite. The technology can be very ordinary, the targets extremely diffuse, and the suppliers widespread.

And finally, the bureaucracy that created the regulatory gridlock of the 1980s is still in place. I have attached to my testimony a chart summarizing this bureaucratic system. It is important to note that far from wanting to rationalize this system key members of Congress last year wanted to expand it and make it even more complex — a fact which makes industry very skeptical about the prospects for EAA legislation this year.

Mr. Chairman, this concludes my testimony, but before doing so I want to thank both you and Congressman Gejdenson for the work you have done on the export control issue over the years and especially over the last two. I look forward to continuing this cooperation in the future.

Thank you. I would be glad to answer any questions.

Export Control System



Notes

1 BXA budget cut by 20% and personnel cut by 30% for FY '94

2 E/B licensing role significantly diminished in recent DOS reorganization.

3 ADCA role in licensing process increased by recent House Foreign Affairs Committee bill

4 Chaired by DOC.

5 COCOM ended in March 1994. Successor regime being negotiated Unclear what referral procedures might be under new regime

NAM National Association of Manufacturers

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